Nakamichi

Service Manual

Nakamichi

OMS-7II
OMS-7AII
OMS-7EII
OMS-70II

Compact Disc Player

MC-Service

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1. GENERAL

1.1 Voltage Selector
Voltage selector is installed on the rear panel of the Other version of the Nakamichi OMS-7II. This voltage selector can select either 110V, 120V or 220-240V at customer's disposal.

1.2 Packing Materials and Owner's Manual

Part No.	Description	Q'ty
0C82066A	Outer Carton OMS-7AII	1
0C82067A	Outer Carton OMS-7EII	1
0C82068A	Outer Carton OMS-70II	1
0C82065A	Outer Carton OMS-7II	1
0C82074A	Inner Carton OMS-7AII	1
0C82075A	Inner Carton OMS-7EII	1
0C82076A	Inner Carton OMS-70II	1
0C82073A	Inner Carton OMS-7II	1
0C82082A	Packing Cushion L	1
0C82083A	Packing Cushion R	1
0C82176A	Plastic Bag	1
0D04643A	Owner's Manual OMS-7AII/7II & OMS-5AII/5II (English)	1
0D04644A	Owner's Manual OMS-7II/7EII & OMS-5II/5EII (English/German/French)	1
0D04642A	Owner's Manual OMS-70II/50II (Japanese)	1

2. PICKUP REPLACEMENT PROCEDURES

2.1 Notice in Handling Pickup
In case of repair or replacement of the Pickup, pay attention to the following handling instructions since the laser diode in the Pickup is not resistant to electricity.

(1) Repair or replace on a work stand on which the conducting rubber is spread.
(2) Use ceramic soldering iron with GND.
(3) Since the Pickup is supplied as a spare part in a conductive bag, take it out of the bag only when you need it.
(4) NEVER turn the adjustment screws of the Pickup.

2.2 Pickup Replacement Procedures
(1) Place the Compact Disc Player upside down on the work stand and remove the Bottom Cover by unfastening 10 screws and the shipping bracket.
(2) Rotate the pulley of the Disc Mechanism Ass'y to move the Pickup in the direction of the arrow. See Fig. 2.1.
(4) Remove L08 and two connectors. See Fig 2.2.

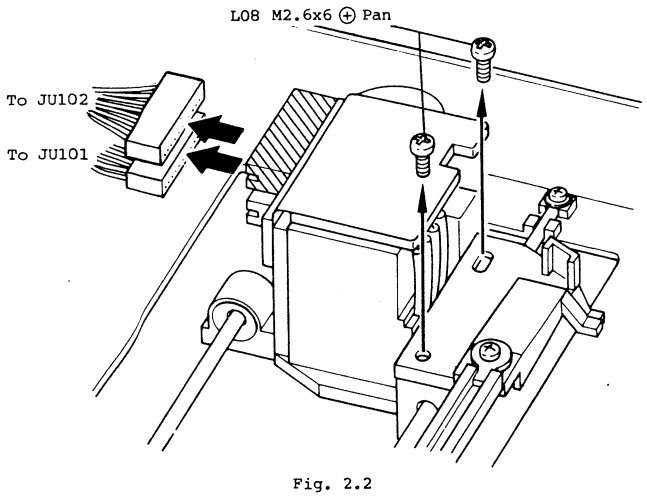

Fig. 2.2

CAUTION
Short the short-terminals on the Pickup during repair or replacement and open them after entire work is completed. Do not touch the Pickup while the short-terminals are open.

Important note for servicing

To avoid static breakdown of the laser diode, the APC connector (JU102) is not be disconnected when the power is on or off.
Before removing connector JU102 for servicing, be sure to solder on the shorting rounds on the laser pickup to short them out. While to assemble the pickup, first connect the JU102 to the Main P.C.B. then open the rounds on the pickup and turn the power on.
NOTE:Use a ceramic heater solder iron with little leak current.

To determine the failure of the laser pickup, sizing the voltage across the pickup can be a key. Connect a digital voltmeter across R601 and press the PLAY button. The current (I) can be calculated as:

(I) = Voltage across R601 / 22 (ohm)

The laser pickup is normal if (I) is obtained within 10% of the value specified on the individual pickup. But (I) shows tendancy to increase when the laser pickup is used over 1000 hours.

15556 A 694	--- 69.4mA

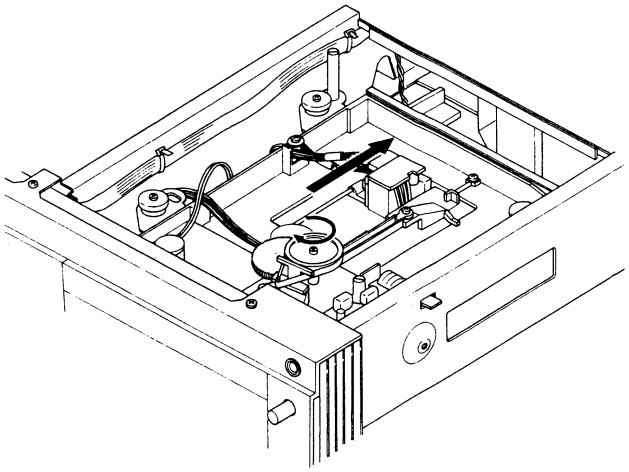
Fig. 2.1

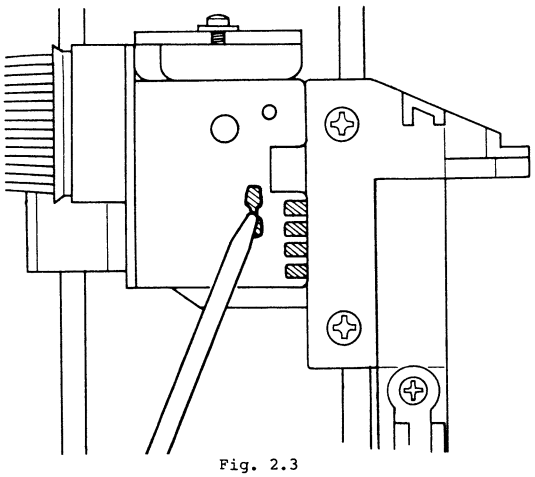
Fig. 2.3

WARNING:
To Protect eyes from laser beam during servicing, DO NOT LOOK AT THE LASER BEAM.
Note: Laser Diode Properties

Material:	GaAlAS
Wavelength:	760nm-800nm
Emission Duration:	continuous
Laser Output:	0.4mW max.
Classification:	Class IIIb

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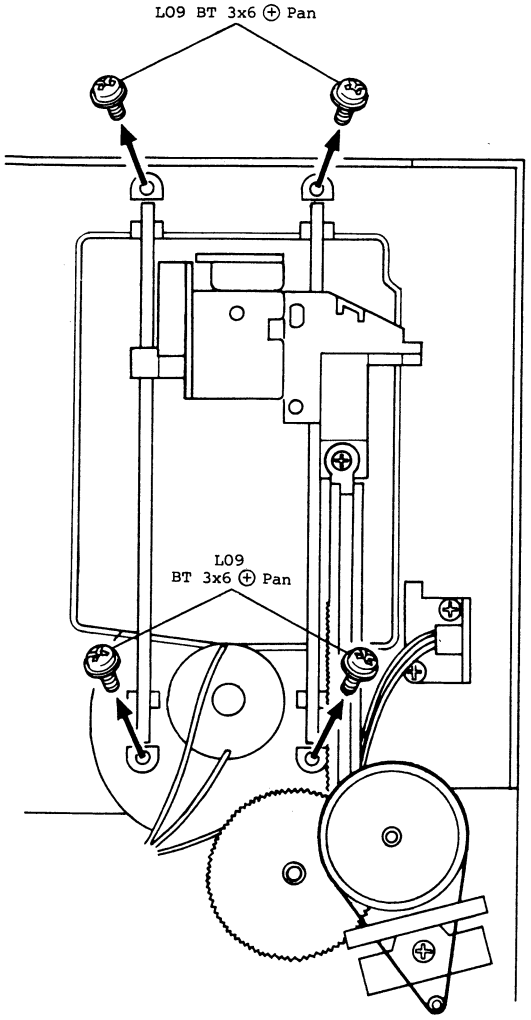
(5) Remove LO9 and pull out 03. See Fig. 2.4.
(6) Mount the new Pickup by reversing the disassembly procedure.
(7) Open the short-terminals after connecting the connectors. (See Fig. 2.3.)



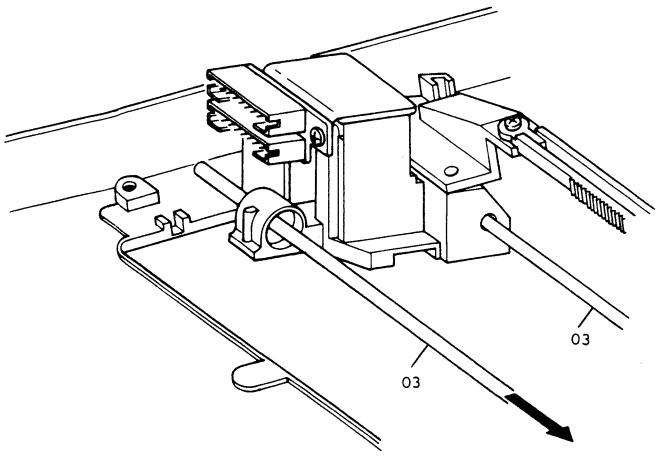


Fig. 2.4

2.3 Adjustment After Replacement of Pickup

Upon completion of replacement of the Pickup, perform the following adjustments in the flow chart shown in Fig. 2.5.

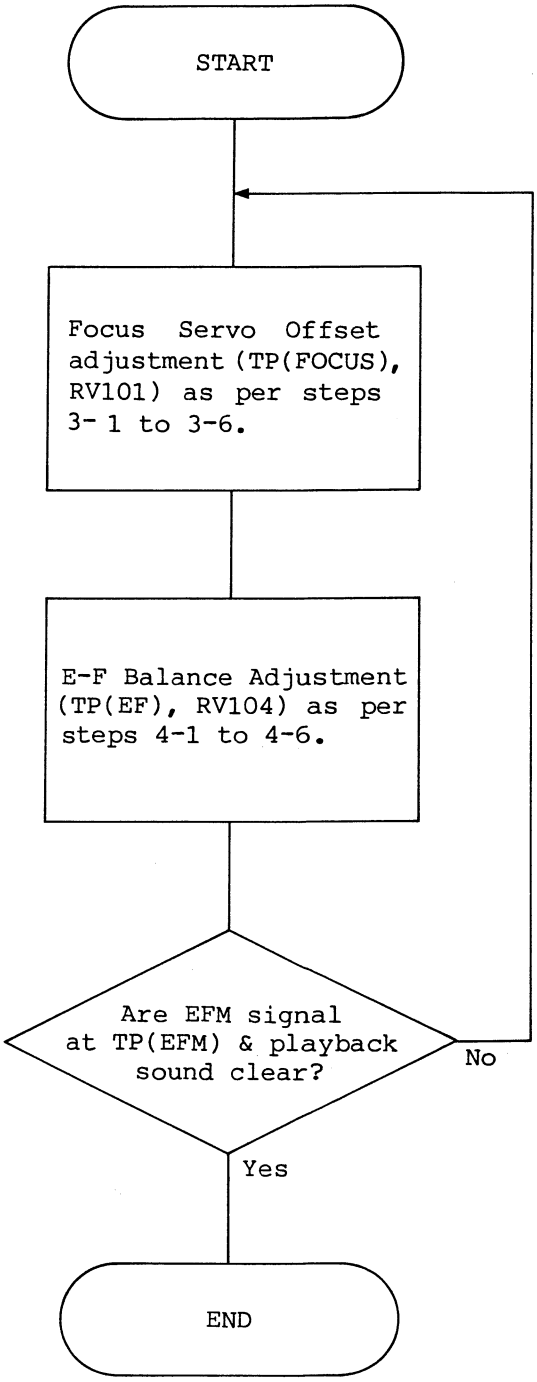

START
Focus Servo Offset adjustment (TP(FOCUS), RV101) as per steps 3- 1 to 3-6.
E-F Balance Adjustment (TP(EF), RV104) as per steps 4-1 to 4-6.
Are EFM signal at TP(EFM) & playback sound clear?
No
Yes
END

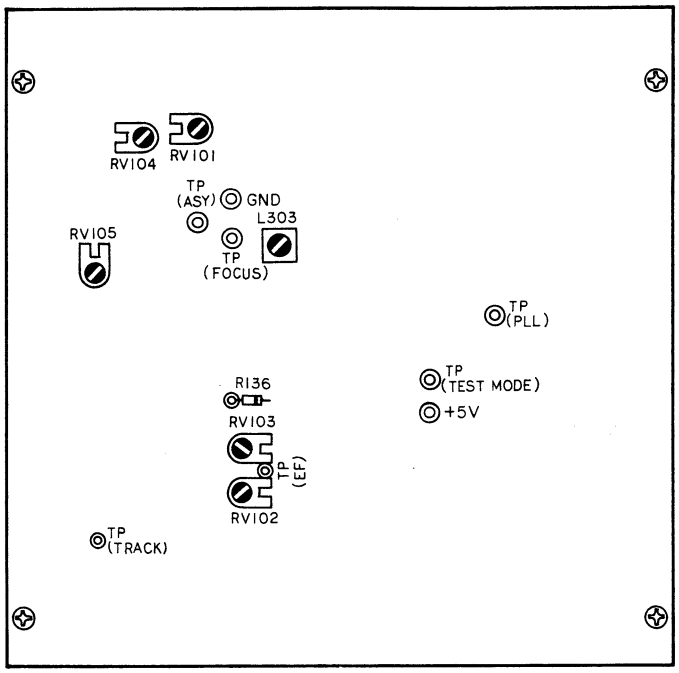
Fig. 2.5

3. MEASUREMENT INSTRUMENTS AND TEST DISCS

(1) Oscilloscope (15MHz or more)
(2) Frequency Counter (15MHz or more)
(3) Audio Signal Generator
(4) Distortion Meter
(5) Sony Test C.D. YEDS-18 Type 3 and 4

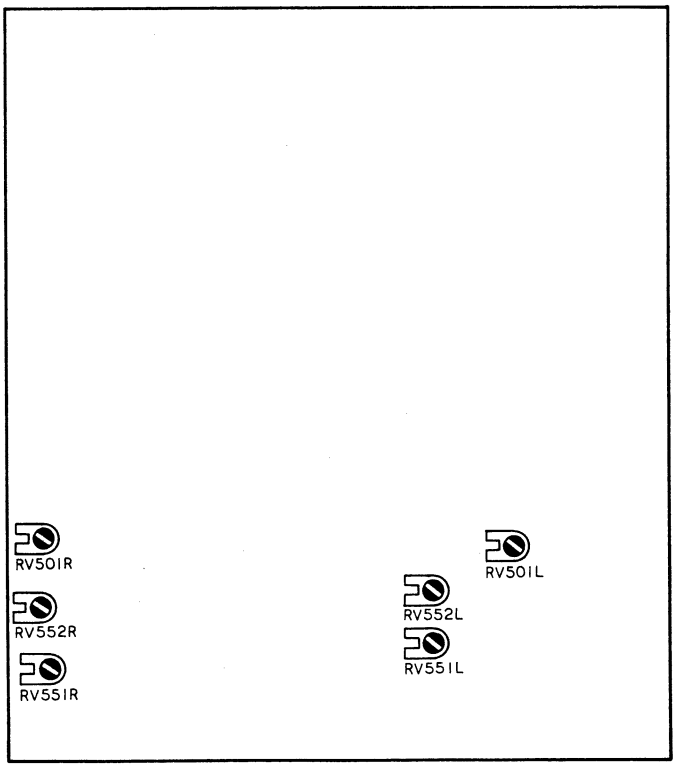
4. PARTS LOCATION FOR ADJUSTMENT

4.1. Parts on P.C.B. Ass'y



Main P.C.B.

Fig. 4.1



D/A Converter P.C.B.

Fig. 4.2

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5. ADJUSTMENTS

5.1 Note
Pay attention to the following before adjustment.

(1) Keep the Compact Disc Player horizontal during adjustment.
(2) Before starting adjustment, allow three minutes after the power is turned ON. Offset voltage will stabilize in this period of time.
(3) Potentiometers that are not stated in the adjustment instructions should be left to their original positions.
(4) Keep the Pickup lens clean. Carefully clean it with lens cleaner or similar tools.
(5) The Tracking Servo Gain adjustment has been factory-aligned using the special filter and the field adjustment is seldom required.

Danger: Invisible laser radiation when opened and interlock failed or defeated. Avoid direct exposure to beam.

5.2. Adjustment Instructions

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	ADJUSTMENT	REMARKS
1	PLL Free-run Frequency Adjustment	None	Frequency counter to TP(PLL) on Main P.C.B.	Main P.C.B. L303	1. Connect the frequency counter to TP(PLL). 2. Connect TP(ASY) to GND. 3. Adjust L303 to obtain 4.3±0.1MHz on the frequency counter.
2	Tracking Offset Adjustment	None	Oscilloscope to TP(TRACK) on Main P.C.B.	Main P.C.B. RV102	1. Set a oscilloscope to DC input and 20mV/div., and connect it to TP(TRACK). 2. Short the TEST MODE pins on Main P.C.B. 3. Press the Repeat button. 4. Adjust RV102 to obtain 0±10 mV on the scope.
3	Focus servo offset adjustment	Test disc Sony Type 4	Oscilloscope to TP(FOCUS) on Main P.C.B.	Main P.C.B. RV101	1. Set a oscilloscope to DC input and connect it to TP(FOCUS). 2. Press the Play button. 3. Observe and record DC average voltage at TP(FOCUS). 4. Press the Stop button. 5. Adjust RV101 to obtain same voltage in step 3 on the scope. 6. Repeat playback and stop a few times and check that the voltage does not change.
4	E-F Balance Adjustment	Test Disc Sony Type 4	Oscilloscope to TP(EF) on Main P.C.B.	Main P.C.B. RV104	1. Set a oscilloscope to DC input and connect it to TP(EF). 2. Press the Play button. 3. Short the TEST MODE pins on Main P.C.B. after pressing the Play button. 4. Press the Time button. 5. Adjust RV104 so that the signal has the symmetrical plus swing and minus swing on the scope. 6. Open the TEST MODE pins and check that playback and track search operates normally.
5	Tracking Servo Gain	Test Disc Sony Type 4	Oscilloscope to TP(TRACK) through a 1kHz BPF. Signal Generator to pin 4 of U102 on Main P.C.B.	Main P.C.B. RV103	1. Set a signal generator to 4 pins of U102. 2. Apply 1kHz, 300mV audio signal to TP(TRACK). Output impedance should be 220k ohms. 3. Turn RV103 slowly clockwise and top at the point where tracking servo signal goes out. At this point, assume that noise level is 0 dB. 4. Adjust RV103 to obtain a 1kHz signal level at -6dB.
6	THD Adjustment	Test Disc Sony Type 3	Distortion meter and Oscilloscope to OUTPUT terminal	D/A Converter P.C.B. RV551L/R RV552L/R RV501L/R	1. Play 10kHz(100%) track and adjust RV552L/R to obtain minimum distortion. 2. Play 1kHz(100%) track and adjust RV551L/R to obtain minimum distortion. 3. Perform steps 2 and 3 again. 4. Play 1kHz(-90dB) track and adjust RV501L/R to obtain equal waveforms on right and left channel.
7	Remote Control Sensitivity Adjustment	Remote Controller	Oscilloscope to UK01 #2pin on Remote P.C.B.	Remote P.C.B. CTK01	1. Connect a 470 or 510 ohm resistor in parallel to RK06. 2. Receive remote control signal and adjust CTK01 to obtain maximum output. 3. Remove the resistor.

6. MECHANISM ASS'Y AND PARTS LIST

6.1 Synthesis

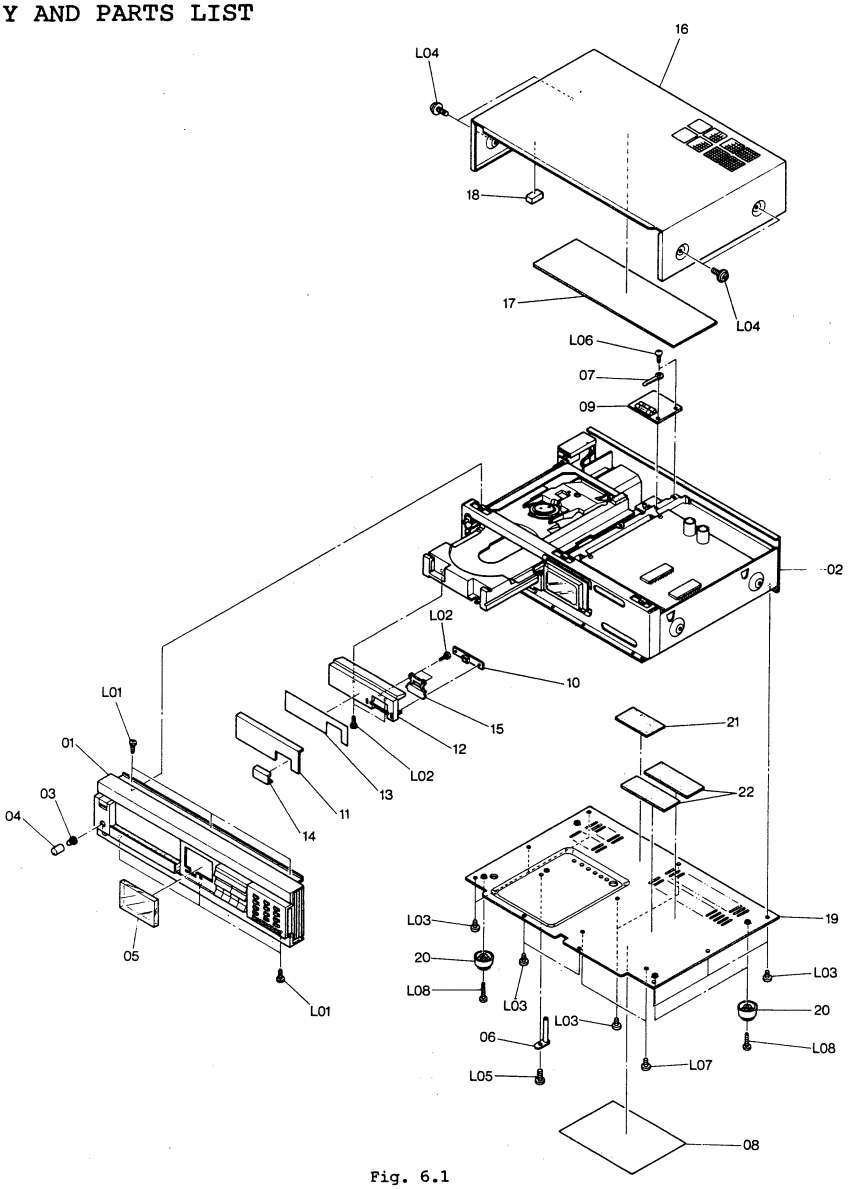

Fig. 6.1

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
01	CA80469A	Front Panel Ass'y (OMS-7II)	1	15	0C80718A	Eject Button Base	1
	CA804669	Front Panel Ass'y (OMS-7AII)	1	16	0C80719A	Top Cover	1
	CA80467A	Front Panel Ass'y (OMS-7EII)	1	17	0C80720A	Vibration Isolation Sheet A (USA)	1
	CA80468A	Front Panel Ass'y (OMS-70II)	1		0C81089A	Vibration Isolation Sheet A	1
02	CA80470A	Chassis Ass'y (OMS-7AII)	1			(Except USA)	
	CA80471A	Chassis Ass'y (OMS-7EII)	1	18	0C81966A	Sponge	2
	CA80472A	Chassis Ass'y (OMS-70II)	1	19	0C81967A	Bottom Cover	1
	CA80473A	Chassis Ass'y (OMS-7II Others)	1	20	0C80722A	Leg	4
	CA80474A	Chassis Ass'y (OMS-7II Canada)	1	21	0C81063A	Vibration Isolating Sheet B (USA)	1
	CA80475A	Chassis Ass'y (OMS-7II Australia)	1		0C81062A	Vibration Isolating Sheet B	1
03	0C80714A	Volume Knob	1			(Except USA)	
04	0C80713A	Volume Knob Cap	1	22	0C81969A	Vibration Isolating Sheet C	2
05	0C80712A	Indicator Lens	1			(Except USA)	
06	0C82175A	Shipping Bracket	1		0C81968A	Vibration Isolating Sheet C (USA)	2
07	0C82240A	Cord Clamper	1	L01	0E00921A	BT 3x8 + Binding	6
08	0M04377A	Caution Label	1	L02	0C82236A	BT 2x6 + Binding (Black Chromate)	4
09	CA80478A	Fuse P.C.B. Ass'y(OMS-7EII)	1	L03	0E00970A	BT 3x4 + Binding	8
	CA80479A	Fuse P.C.B. Ass'y(except OMS-7EII)	1	L04	0C81064A	M 4x8 + Pan Washer-faced	4
10	CA80476A	Eject/Load P.C.B. Ass'y	1			(Black Chromate)	
11	0C80716A	Disc Tray Lid	1	L05	0C82239A	Shipping Screw (Red)	1
12	0C80717A	Lid Frame	1	L06	0C81033A	BT 3x8 + Round	2
13	0C82153A	Sheet	1	L07	0C82237A	BT 3x8 + Binding (Black Chromate)	2
14	0C80715A	Eject Button	1	L08	0C82238A	BT 3x10 + Binding	4

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6.2 Front Panel Ass'y

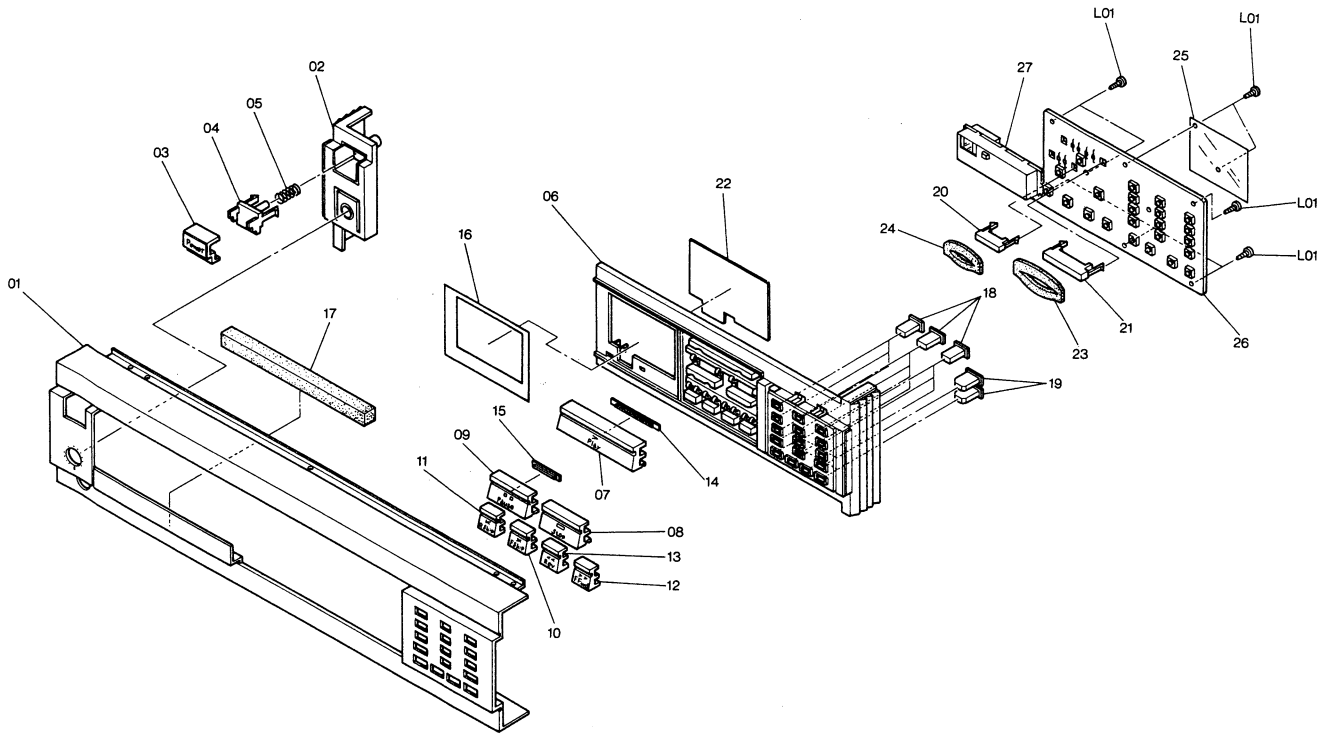

Fig. 6.2

Schematic Ref. No.	Part No.	Description	Q'ty
	CA80469A	Front Panel Ass'y (OMS-7II)	1
	CA80466A	Front Panel Ass'y (OMS-7AII)	1
	CA80467A	Front Panel Ass'y (OMS-7EII)	1
	CA80468A	Front Panel Ass'y (OMS-70II)	1
01	0C82019A	Front Panel (OMS-7II)	1
	0C82016A	Front Panel (OMS-7AII)	1
	0C82017A	Front Panel (OMS-7EII)	1
	0C82018A	Front Panel (OMS-70II)	1
02	0C80724A	Front Escutcheon L	1
03	0C82085A	Power Button Cap	1
04	0C82081A	Power Button	1
05	0C80723A	Spring	1
06	0C81370A	Front Escutcheon R	1
07	0C81363A	Play Button	1
08	0C81364A	Stop Button	1
09	0C81365A	Pause Button	1
10	0C81366A	F. Skip Button	1
11	0C81367A	R. Skip Button	1
12	0C81368A	F.Fwd Button	1
13	0C81369A	Rev Button	1
14	0C81031A	Play Indicator	1
15	0C81030A	Pause Indicator	1
16	0C82162A	Indicator Sheet	1
17	0C80725A	Sponge A	1
18	0C80726A	Push Switch Button A	10
19	0C80705A	Push Switch Button B	6
20	0C82051A	LED Holder A	1
21	0C82052A	LED Holder B	1
22	0C80706A	FL Filter	1
23	0C81433A	Sponge C	1
24	0C81432A	Sponge B	1
25	0C82163A	Cable Protector	1
26	CA80480A	Control Switch P.C.B. Ass'y	1
27	CA80492A	Remote Control P.C.B. Ass'y	1
L01	0E00792A	BT 2.6x6 + Pan	8

6.3 Chassis Ass'y

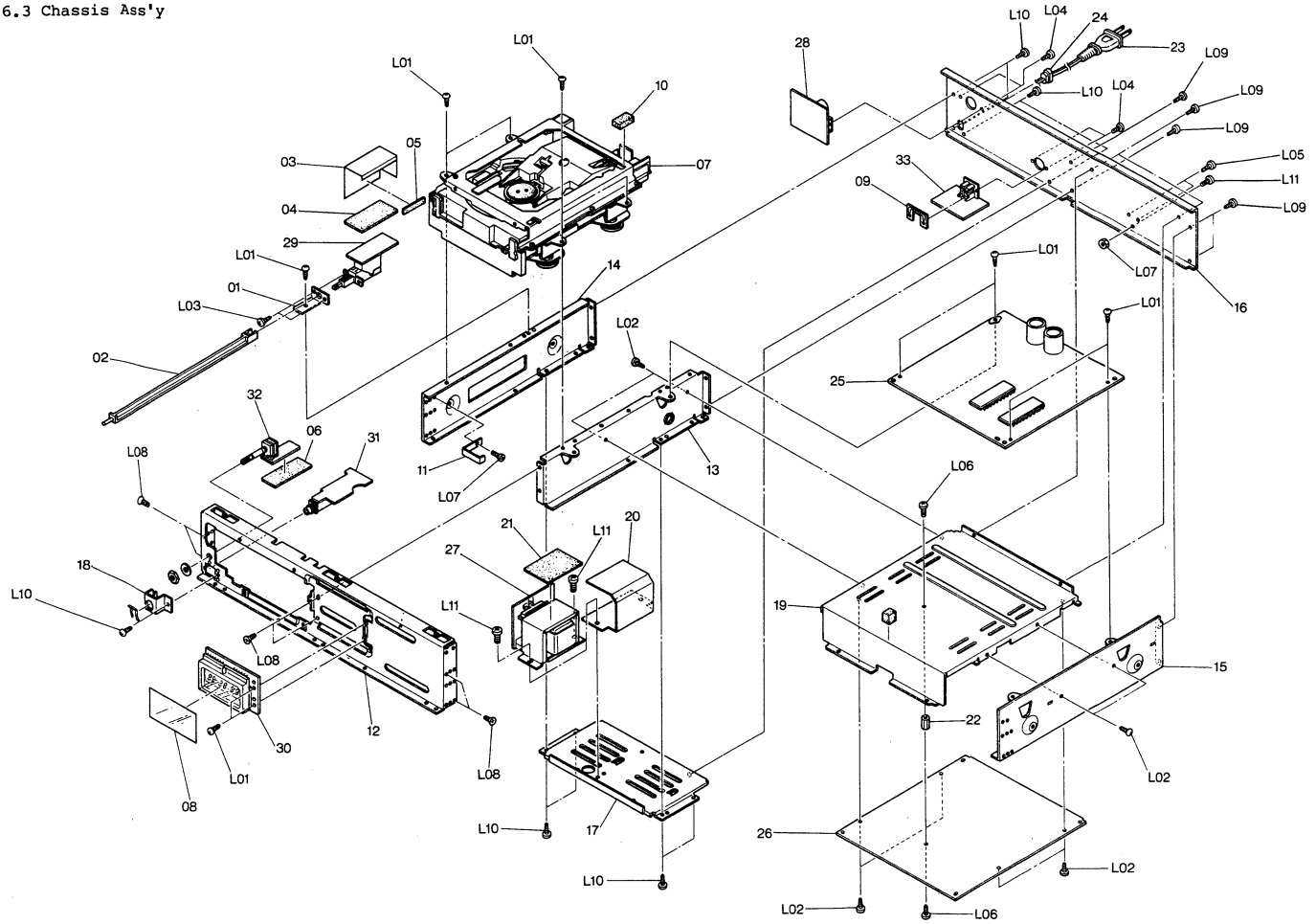

Fig. 6.3

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
	CA80470A	Chassis Ass'y (OMS-7AII)	1	23	0C81210A	Power Cord (OMS-7EII)	1
	CA80471A	Chassis Ass'y (OMS-7EII)	1		0C81208A	Power Cord (OMS-70II)	1
	CA80472A	Chassis Ass'y (OMS-70II)	1		0C81211A	Power Cord (OMS-7II Australia)	1
	CA80473A	Chassis Ass'y (OMS-7II Others)	1	24	0B08037U	Cord Bushing	1
	CA80474A	Chassis Ass'y (OMS-7II Canada)	1	25	CA80485A	Main P.C.B. Ass'y	1
	CA80475A	Chassis Ass'y (OMS-7II Australia)	1	26	CA80486A	D/A Converter P.C.B. Ass'y	1
				27	CA80494A	Power Trans. P.C.B. Ass'y	1
01	0C80694A	Power Switch Bracket	1			(OMS-7AII & OMS-7II Canada)	
02	0C80693A	Joint Bar	1		CA80495A	Power Trans. P.C.B. Ass'y (OMS-7EII)	1
03	0C80695A	Power Switch Insulator	1		CA80496A	Power Trans. P.C.B. Ass'y (OMS-70II)	1
04	0C80696A	Power Switch Sponge A	1		0C80505A	Power Trans. P.C.B. Ass'y(OMS-7II)	1
05	0C80697A	Power Switch Sponge B	1		CA80497A	Power Trans. P.C.B. Ass'y	1
06	0C80692A	Volume Insulator	1			(OMS-7II Australia)	
07	CA80445A	Disc Mechanism Ass'y	1	28	CA80498A	Voltage Selector P.C.B. Ass'y	1
08	0C80689A	FL Filter B	1			(OMS-7II Others)	
09	0C80710A	DIN Jack Plate	1	29	CA80491A	Power Switch P.C.B. Ass'y (OMS-7EII)	1
10	0C82151A	Damper	1		CA80478A	Power Switch P.C.B. Ass'y	1
11	0C82152A	U-shape Bracket	1			(Except OMS-7EII)	
12	0C81953A	Front Chassis	1	30	CA80490A	FL Indicator P.C.B. Ass'y	1
13	0C81954A	Center Chassis	1	31	CA80488A	Headphone Amp. P.C.B. Ass'y	1
14	0C81955A	Side Chassis L	1	32	CA80489A	Volume P.C.B. Ass'y	1
15	0C81956A	Side Chassis R	1	33	CA80493A	Wired Remote Control P.C.B. Ass'y	1
16	CA81957A	Rear Panel (OMS-7AII)	1	L01	0C81033A	BT 3x8 + Round	11
	CA81958A	Rear Panel (OMS-7EII)	1	L02	0E00868A	BT 3x8 + Binding	8
	CA81959A	Rear Panel (OMS-70II)	1	L03	0E03369A	BT 3x4 + Binding	4
	CA81960A	Rear Panel (OMS-7II)	1	L04	0C80958A	M 3x8 + Binding (Black Chromate)	4
17	0C81961A	Power Transformer Bracket	1	L05	0C81091A	BT 3x8 + Binding (Black Chromate)	2
18	0C80690A	Headphone Jack Bracket	1	L06	0E00896A	BT 3x6 + Binding	1
19	0C81962A	Power Transformer Spacer	1	L07	0E00824A	BT 2.6x6 + Pan	1
20	0C81963A	Shield Cover	1	L08	0E00868A	BT 3x8 + Countersunk	6
21	0C81964A	Power Transformer Sheet	1	L09	0C81032A	M 3x8 + Nailtap Screw (Black)	10
22	0C81965A	Shaft	1	L10	0C81033A	BT 3x8 + Binding	5
23	0C81209A	Power Cord (OMS-7AII, OMS-7II Canada & Others)	1	L11	0C82143A	BT 4x6 + Binding	2

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6.4 Disc Mechanism Ass'y

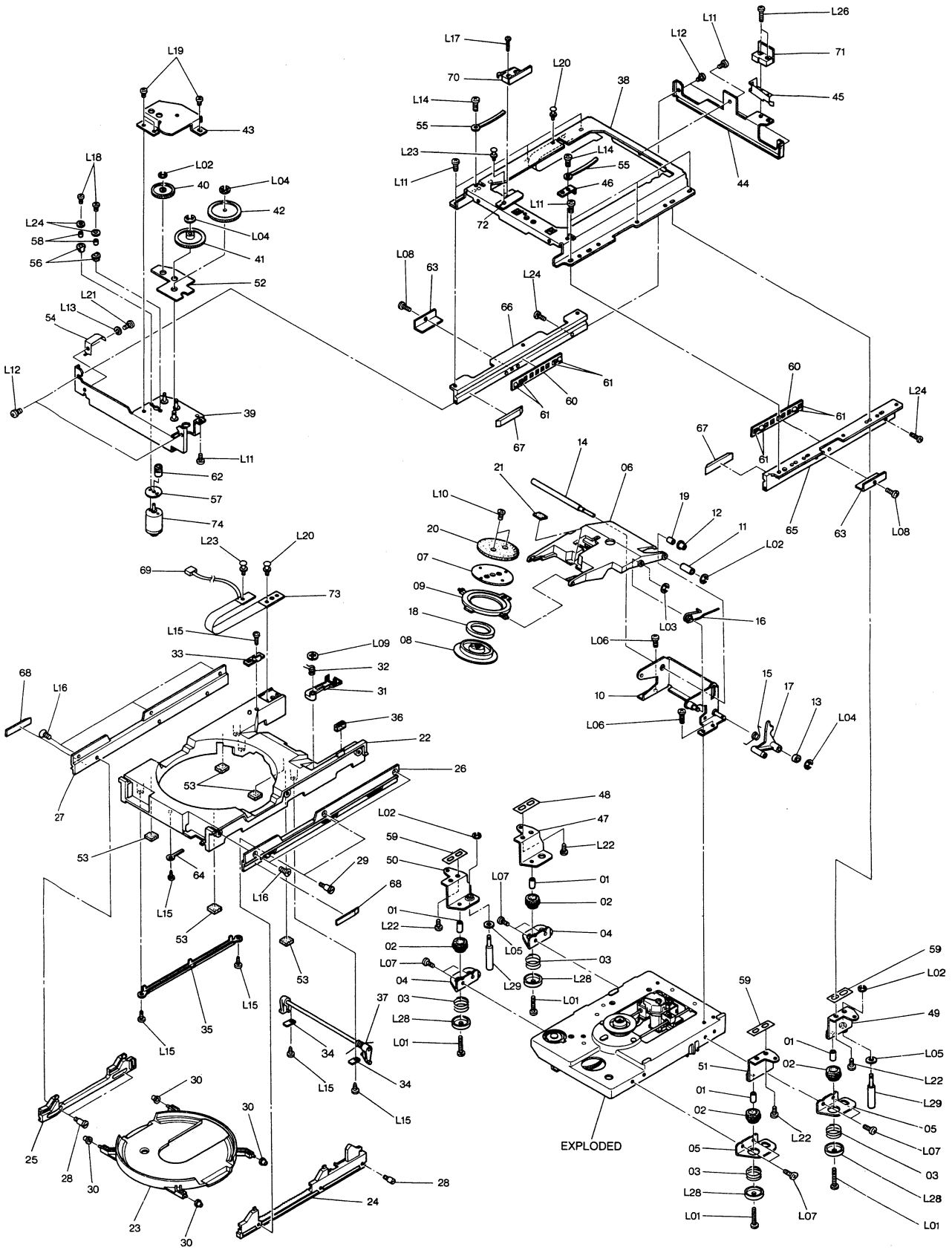


Fig. 6.4

Schematic Ref. No.	Part No.	Description	Q'ty
	CA80445A	Disc Mechanism Ass'y	1
01	0C81016A	Collar	4
02	0C81022A	Damper B	4
03	0C81970A	Mechanism Spring	4
04	0C80773A	Mechanism Bracket L	2
05	0C80774A	Mechanism Bracket R	2
06	0C81971A	Chuck Arm	1
07	0C81991A	Chuck Cover	1
08	0C81992A	Chuck	1
09	C081993A	Chuck Support	1
10	CA80453A	Arm Bracket Ass'y	1
11	0C80945A	Collar A	1
12	0C80946A	Collar B	1
13	0C80947A	Collar C	1
14	0C81997A	Arm Shaft A	1
15	0C81998A	Timing Arm Spring	1
16	0C81999A	Chuck Arm Spring	1
17	CA80276A	Timing Arm Ass'y	1
18	0C82000A	Magnet	1
19	0C82001A	Damper Tube	1
20	0C82002A	Chuck Damper	1
21	0C82003A	Sponge	1
22	0C82004A	Box	1
23	0C82005A	Table	1
24	0C82006A	Rack A	1
25	0C81009A	Rack B	1
26	0C80981A	Box Rail R	1
27	0C80982A	Box Rail L	1
28	0C80986A	Guide Screw A	2
29	0C80985A	Guide Screw B	2
30	0C80970A	Table Roller	4
31	0C82007A	Lock Arm	1
32	0C81007A	Lock Arm Spring	1
33	0C80971A	Switch Plate	1
34	0C80976A	Rack Arm Plate	2
35	0C81149A	Cord Cover	1
36	0C80999A	Cushion	1
37	CA80354A	Rack Arm Ass'y	1
38	CA80446A	Box Guide Ass'y	1
39	CA80504A	Gear Bracket Ass'y	1
40	0C81153A	Gear B	1
41	0C81154A	Gear C	1
42	0C81155A	Gear D	1
43	0C81156A	Gear Cover	1
44	0C80969A	Rear Bracket	1
45	0C82008A	Actuator	1
46	0C81160A	Stopper	1
47	0C80992A	Front Bracket L	1
48	0C80983A	Guide Screw C	1
49	CA80281A	Front-Right Bracket Ass'y	1
50	CA80282A	Rear-Left Bracket Ass'y	1
51	0C80993A	Front Bracket R	1
52	0C81005A	Damper A	1
53	0C82155A	Damper Shaft	5
54	0C80972A	Spring	1
55	0C80991A	Wire Clamper	2
56	0C81164A	Bushing	2
57	0C81006A	Sheet	1
58	0C80984A	Spacer	2
59	0C81002A	Guide Sheet	6
60	0C82009A	Roller Guide	2
61	0C81000A	Roller	8
62	0C81001A	Gear M	1
63	0C81972A	Bracket Spacer	2
64	0C81171A	Wire Clamper	1
65	0C81973A	Guide Rail R	1
66	0C81974A	Guide Rail L	1
67	0C81975A	Guide Rail Sheet	2
68	0C81976A	Disc Tray Spacer	2
69	0C81977A	2P Connector Cord	1
70	CA80499A	Open End Switch P.C.B. Ass'y	1
71	CA80500A	Close End Switch P.C.B. Ass'y	1
72	CA80503A	Photo Diode P.C.B. Ass'y	1
73	0C81058A	Flexible P.C.B.	1
74	0C81978A	Loading Motor	1
L01	0C81014A	M 3x16 + Pan	4
L02	0E00042A	E-Ring 1.5mm	4
L03	0E00698A	E-Ring 2.5mm	1
L04	0E00222A	E-Ring 2mm	3
L05	0C81015A	Washer 3x10x0.8 (Nickel)	2
L06	0E00965A	BT 3x6 + Binding (Nickel)	3
L07	0C82156A	BT 3x6 + Pan (Nickel)	8
L08	0E00964A	M 3x5 + Binding	2
L09	0C80952A	Stopper Ring 3mm (CS)	1
L10	0E00955A	BT 2x4 + Binding	2
L11	0C80957A	M 3x6 + Binding	8
L12	0C80962A	M 2.6x6 + Pan	4
L13	0C80967A	Washer 2.6x5.3x0.6	1
L14	0C80957A	M 3x6 + Binding	1
L15	0C80965A	BT 2.6x6 + Pan (Black Chromate)	6
L16	0C80961A	M 2.6x4 + Countersunk (Black Chromate)	6
L17	0C80955A	M 2.3x8 + Binding	1
L18	0E00124A	M 2x4 + Pan	2
L19	0C80963A	M 2x1.8 + Pan (Black Chromate)	2
L20	0C80953A	Plastic Rivet 3x4.5 (Black)	2
L21	0C80960A	M 2.6x3 + Pan (Black Chromate)	1
L22	0C80958A	M 3x8 + Binding (Black Chromate)	4
L23	0C80954A	Plastic Rivet 3x5.5 (Black)	2
L24	0C80964A	BT 2x6 + Pan (Black Chromate)	2
L25	0C80966A	Washer 2x6x4	2
L26	0C80955A	M 2.3x8 Binding	2
L28	0C81018A	Washer 7x0.6	4
L29	0C81017A	Shipping Screw	2

6.5 Disc Mechanism Sub Ass'y

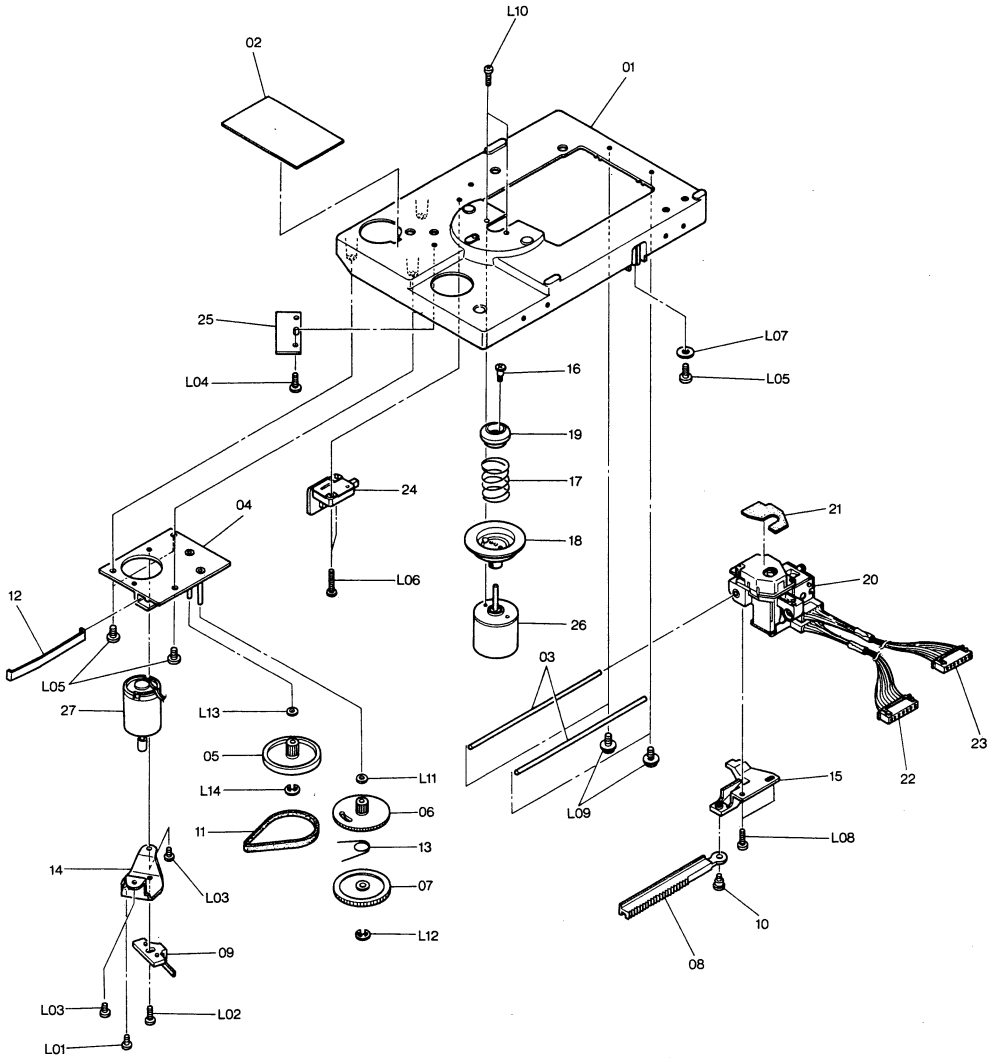


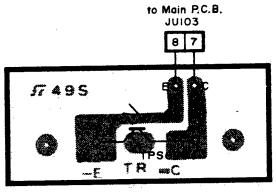
Fig. 6.5

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
01	0C81981A	Mechanism Chassis	1	22	0C82256A	8P Connector Cord	1
02	0C80794A	Sheet	1	23	0C82257A	9P Connector Cord	1
03	0C81982A	Pickup Shaft	2	24	CA80501A	Inner End Switch P.C.B. Ass'y	1
04	CA80261A	Gear Base Ass'y	1	25	CA80502A	Photo Transistor P.C.B. Ass'y	1
05	0C80790A	Gear A	1	26	0C81979A	Disc Motor	1
06	0C80788A	Gear B	1	27	0C81980A	Feed Motor	1
07	0C80789A	Gear C	1	L01	0E00804A	M 2x4 + Binding (Black Chromate)	1
08	0C80797A	Rack Gear	1	L02	0E00973A	M 2x6 + Binding	1
09	0C80792A	Belt Guide	1	L03	0E00869A	BT 2.6x4 + Binding	2
10	0C80777A	Pulley Support	1	L04	0C82229A	BT 2.6x6 + Binding (Nickel)	1
11	0C80793A	Belt	1	L05	0E00965A	BT 3x6 + Binding (Nickel)	4
12	0C80782A	Rack Spring	1	L06	0C82230A	BT 2.6x10 + Pan (Nickel)	2
13	0C80785A	Spring A	1	L07	0C82231A	Washer 3mm (3x12x5)	1
14	0C80770A	Motor Bracket	1	L08	0E00121A	M 2.6x6 + Pan	2
15	0C81983A	Rack Support	1	L09	0C82234A	BT 3x6 + Pan (Nickel)	4
16	0C81984A	Ring Set Screw	1	L10	0C82235A	BT 2x6 + Pan	2
17	0C81985A	Ring Spring	1	L11	0C82232A	Washer (Plastics)	1
18	0C81986A	Disc Table	1	L12	0E00222A	E-Ring 2mm	1
19	0C81987A	Slide Ring	1	L13	0C82233A	Washer (Plastics)	1
20	0C81988A	Laser Pickup	1	L14	0E00042A	E-Ring 1.5mm	1
21	0C81989A	Damper Plate	1				

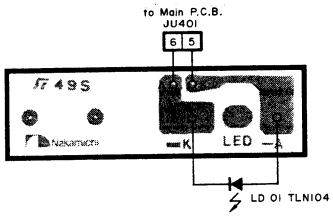
7. MOUNTING DIAGRAMS AND PARTS LIST

Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
2. Diode is MA150, 1SS53, 1SS1555, or 1SS176 unless otherwise specified.
3. Abbreviation for part name:
TR-Transistor, SiD-Silicon Diode, Varicap-Variable Capacitance Diode
RK-Carbon Resistor, RM-Metal Film Resistor, RF-Fail Safe Type Resistor
CE-Electrolytic Capacitor, CM-Mylar Capacitor, CC-Ceramic Capacitor
CT-Tantalum Capacitor, C-Mica Capacitor
CSP-Polystyrene Capacitor, CMM-Metallized Mylar Capacitor

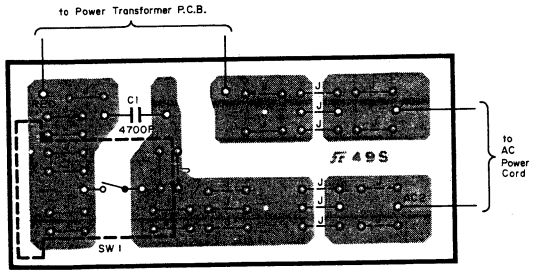
7.1. Photo Transistor P.C.B. Ass'y



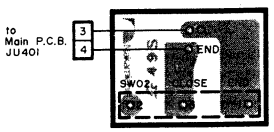
7.2. Photo Diode P.C.B. Ass'y



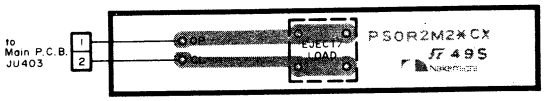
7.3. Power Switch P.C.B. Ass'y



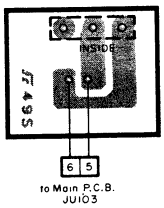
7.4. Close End Switch P.C.B. Ass'y



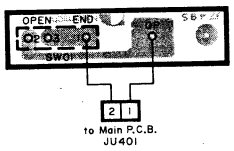
7.5. Eject/Load Switch P.C.B. Ass'y



7.6. Inner End Switch P.C.B. Ass'y



7.7. Open End Switch P.C.B. Ass'y



Schematic Ref No.	Part No.	Description
Q01	CA80502A 0C82039A 0C80758A	Photo Transistor P.C.B. Ass'y Photo Transistor P.C.B. Photo Transistor TPS605
LD01	CA80503A 0C82040A 0C80759A	Photo Diode P.C.B. Ass'y Photo Diode P.C.B. Photo Diode TLN104
C1 CV1 SW1	CA80491A CA80487A 0C82042A 0C82186A 0C82167A 0C80914A	Power Switch P.C.B. Ass'y (Except OMS-7EII) Power Switch P.C.B. Ass'y (OMS-7EII) Power Switch P.C.B. CC 4700P 250V Spark Killer Cover (OMS-7EII) Power Switch

Schematic Ref No.	Part No.	Description
SW02	CA80500A 0C82037A 0C80912A	Close End Switch P.C.B. Ass'y Close End Switch P.C.B. Microswitch SS-5D
KS01	CA80477A 0C82024A 0C82062A	Eject/Load P.C.B. Ass'y Eject/Load P.C.B. Key Switch B3F-1000
AC1005 SW03	CA80501A 0C82038A 0C82101A 0C82177A	Inner End Switch P.C.B. Ass'y Inner End Switch P.C.B. 9P Connector Cord Slide Switch SCL101P
AC2001 SW01	CA80499A 0C82036A 0C82099A 0C80911A	Open End Switch P.C.B. Ass'y Open End Switch P.C.B. 8P Connector Cord Microswitch SS-5GL13

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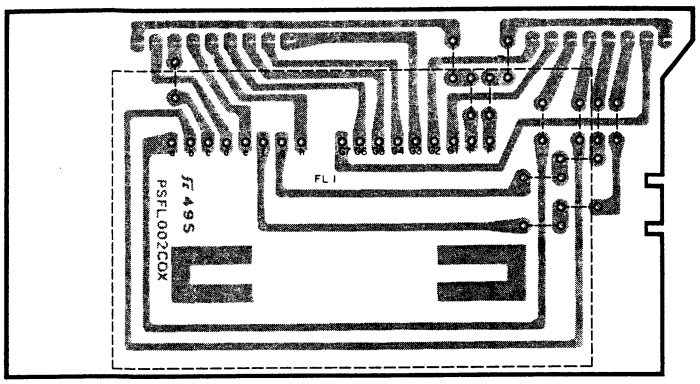
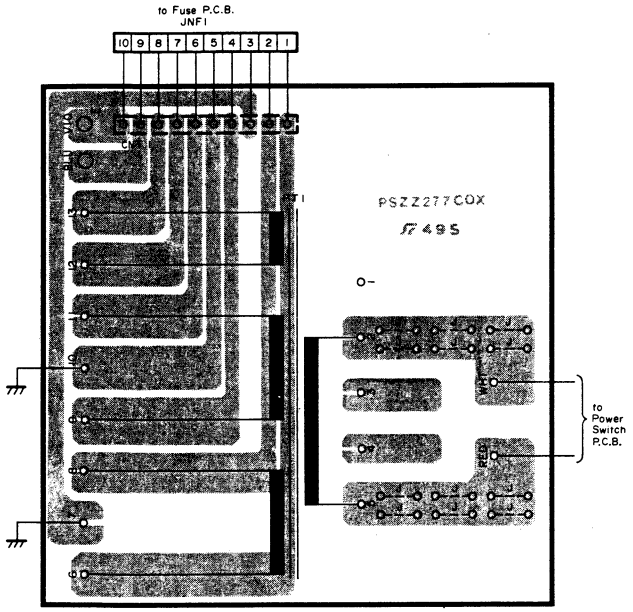
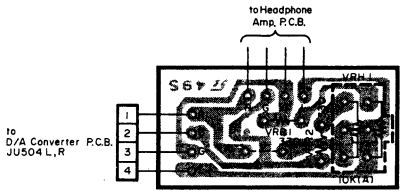
7.8. FL Indicator P.C.B. Ass'y



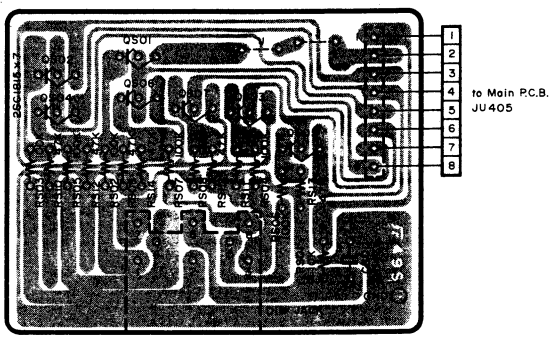
7.9. Power Tansformer P.C.B. Ass'y



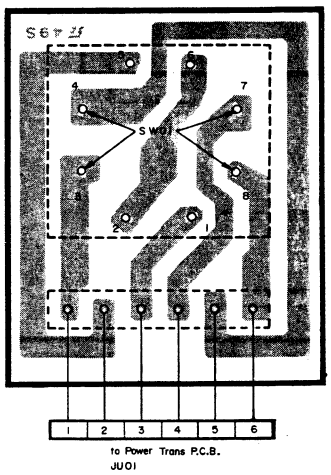
7.10. Volume P.C.B. Ass'y



7.11. Wired Remote Control P.C.B. Ass'y



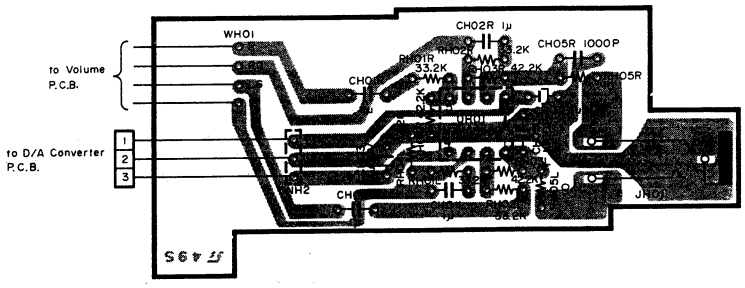
7.12. Voltage Selector P.C.B. Ass'y



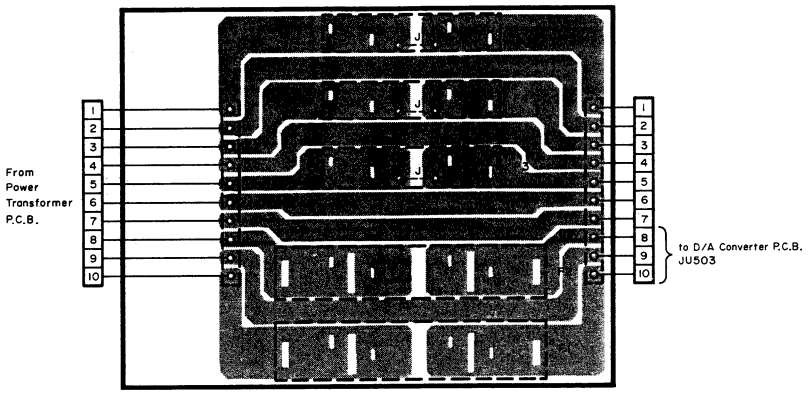
Schematic Ref No.	Part No.	Description
	CA80490A	FL Indicator P.C.B. Ass'y
	0C82030A	FL Indicator P.C.B.
CN 1	0C82097A	8P Connector Cord
CN 2	0C82100A	9P Connector Cord
FL 1	0C82170A	FL Indicator
SP 1	0C82171A	FL Indicator Spacer
	CA80494A	Power Transformer P.C.B. Ass'y(OMS-7AII & OMS-7II Canada)
	CA80495A	Power Transformer P.C.B. Ass'y(OMS-7EII & OMS-7II Australia)
	CA80496A	Power Transformer P.C.B. Ass'y(OMS-70II)
	0C82033A	Power Transformer P.C.B.
CNT 1	0C82104A	10P Connector Cord
JU 1	0C82091A	Terminal (except Others)
PT 1	0C82046A	Power Transformer (OMS-7AII & OMS-7II Canada)
	0C82047A	Power Transformer (OMS-7EII & OMS-7II Australia)
	0C82048A	Power Transformer (OMS-70II)

Schematic Ref No.	Part No.	Description
	CA80489A	Volume P.C.B. Ass'y
	0C82029A	Volume P.C.B.
CNH1	0C81116A	VR 10K (A)x2
JNH1	0C82093A	3P Connector Cord
VRH1	0C82088A	4P Connector Terminal
VRR1,2	0B05577A	RK 330 1/4W J
	CA80493A	Wired Remote Control P.C.B. Ass'y
	0C82032A	Wired Remote Control P.C.B.
CNS01	0C82096A	8P Connector Cord
CS01	0B05811A	CM 0.047uF 50V K
EW01	0C82044A	Ground Wire
JS01	0C80917A	8P Din Jack Socket
QS01-07	0B10088A	TR 2SC1815(Y,GR)
RS01	0B01888A	RK 10K 1/4W J
RS02-8	0B01889A	RK 100K 1/4W J
RS09-15	0B05641A	RK 47K 1/4W J
	CA80498A	Voltage Selector P.C.B. Ass'y (Others)
	0C82034A	Voltage Selector P.C.B.
CNSW1	0C82106A	11P Connector Cord
SP01	0C82161A	Sponge
SW01	0C82050A	Voltage Selector

7.13. Headphone Amp. P.C.B. Ass'y

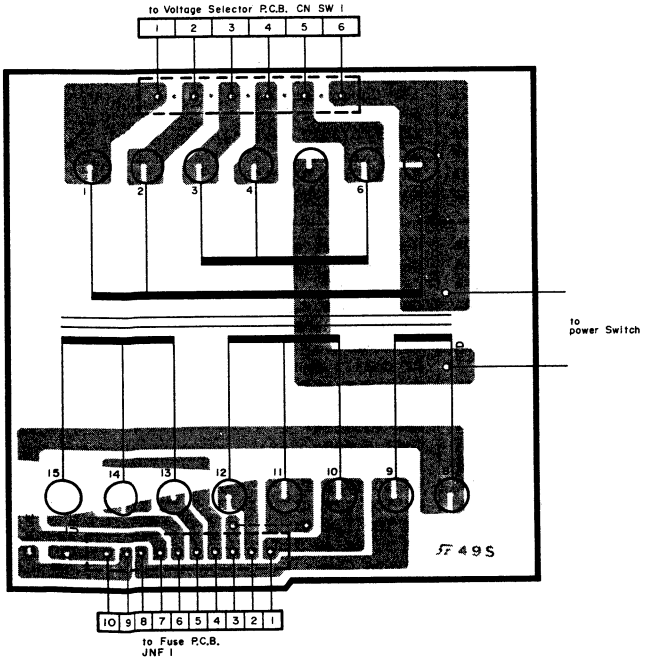


7.14. Fuse P.C.B. Ass'y



	220V Class 2	Except for 220V Class 2
F1 F2	800mA 250V	800mA 250V
F3	320mA 250V	Shorted
F4 F5	800mA 250V	Shorted

7.15. Power Transformer P.C.B. Ass'y (Others only)



Schematic Ref No.	Part No.	Description
	CA80488A	Headphone Amp. P.C.B. Ass'y
	0C82028A	Headphone Amp. P.C.B.
CH01L,R	0B09868A	CM 1u 50V J
CH02L,R	0B09868A	CM 1u 50V J
CH03	0B01405A	CE 1u 50V
CH04	0B01405A	CE 1u 50V
CH05L,05R	0B04059A	CM 1000P 50V K
CNH2	0C82254A	2P+3P Connector Cord
JH01	0C82168A	Headphone Jack
RH01L,01R	0C82243A	RK 33.2K 1/8W F
RH02L,02R	0C82243A	RK 33.2K 1/8W F
RH03L,03R	0C82244A	RK 42.2K 1/8W F
RH04L,04R	0C82244A	RK 42.2K 1/8W F
RH05L,05R	0C82213A	RK 10 1/8W F
RH06L,06R	0B05936A	RK 10 1/4W J
UH01	0B06370A	IC NJM4556D
WH01	0C82169A	P.C.B. Joint
	CA80479A	Fuse P.C.B. Ass'y (Except OMS-7EII)
	CA80478A	Fuse P.C.B. Ass'y (OMS-7EII)
	0C82025A	Fuse P.C.B.
	0C82060A	Fuse Holder (Except OMS-7EII)
	0C82059A	Fuse Holder (OMS-7EII)
	0C82061A	Fuse Label
CNF1	0C82103A	10P Connector Cord
F1,2	0C82058A	Fuse 250V 800mA (Except OMS-7EII)
F1,2	0C82056A	Fuse 250V 800mA (OMS-7EII)
F3	0C82057A	Fuse 250V 320mA (OMS-7EII)
F4,5	0C82056A	Fuse 250V 800mA (OMS-7EII)
JUF1	0C82086A	10P Connector Terminal
	CA80497A	Power Transformer P.C.B. Ass'y (Others)
	0C82035A	Power Transformer P.C.B. Ass'y
CNT1	0C82242A	10P Connector Cord
JU01	0C82090A	11P Connector Terminal
JU1	0C82091A	2P Connector Terminal
PT1	0C82241A	Power Transformer

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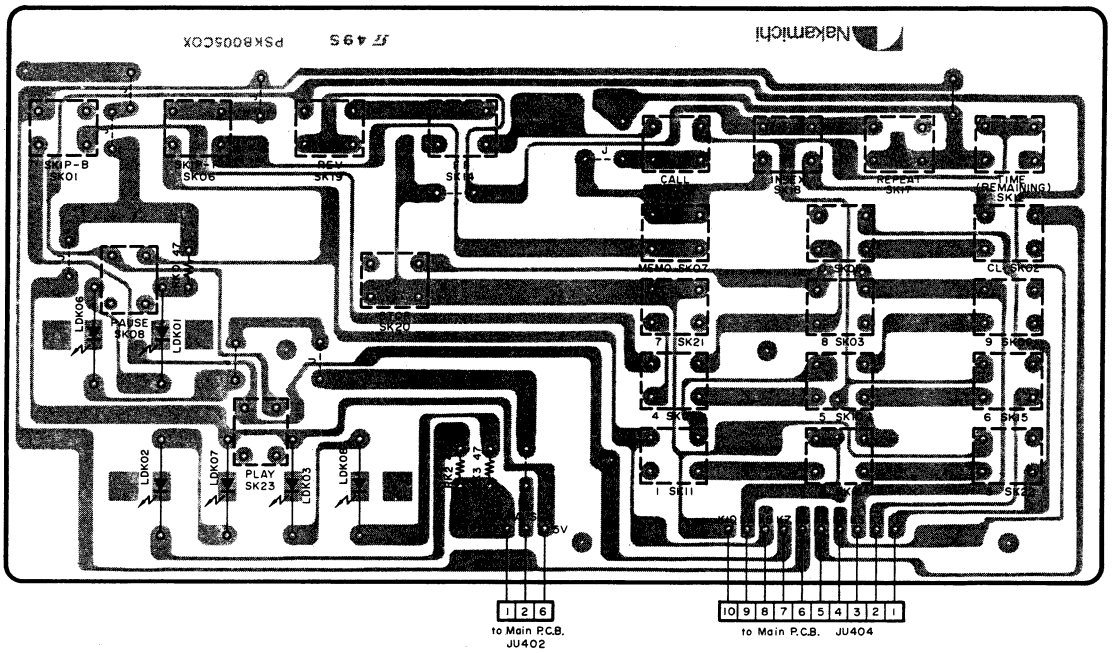
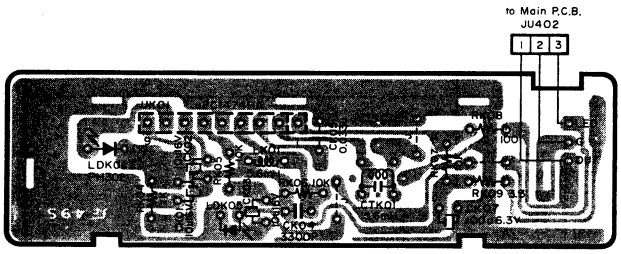
7.16. Control Switch P.C.B. Ass'y



7.17. Remote Receiver P.C.B. Ass'y



Schematic Ref No.	Part No.	Description
	CA80480A	Control Switch P.C.B. Ass'y
	0C82026A	Control Switch P.C.B.
CNK01	0C82102A	10P Connector Cord
CNK02	0C82255A	6P Connector Cord
LDK01-8	0C82136A	LED LN01301C (Green)
RK01-3	0C82227A	RK 47 1/2W
SK01-22	0C82063A	Key Switch B3F-1020
SK23	0C82064A	Key Switch B3F-1022
	CA80492A	Remote Receiver P.C.B. Ass'y
	0C82031A	Remote Receiver P.C.B.
CK01-3	0B09946A	CE 10u 16V
CK04	0B01914A	CM 3300p 50V J
CK05	0B05583A	CM 0.033u 50V J
CK07	0B05885A	CE 100u 6.3V
CTK01	0C82043A	RF Coil 5.6mH
FK01	0C82144A	Sensor Filter
LDK04	0C80753A	Photo Diode PH302
LDK05	0C80754A	LED PG5551KY
LK01	0C81151A	Coil 5.6mH
RK04	0B01857A	RK 1K 1/4W J
RK05	0B05936A	RK 10 1/4W J
RK06,07	0B01888A	RK 10K 1/4W J
RK08	0B01679A	RK 100 1/4W J
RK09	0B09304A	RK 3.3 1/4W J
SHK01	0C81207A	Shield Case
SHK02	0C82145A	Sensor Shield
SPK01	0C82146A	LED Spacer
SPK02	0C82147A	Sensor Spacer
UK01	0C80752A	IC uPC1474HA

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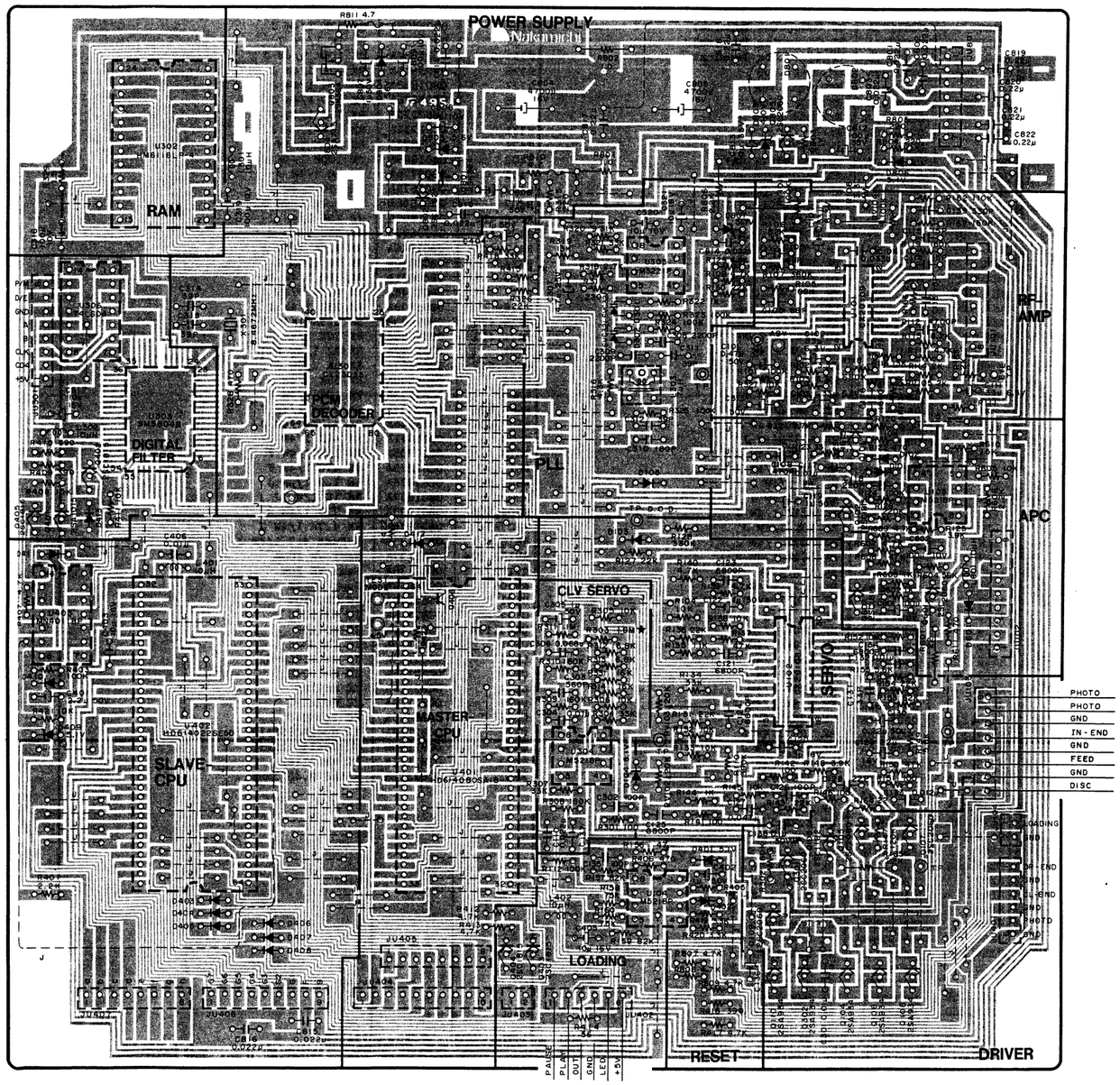
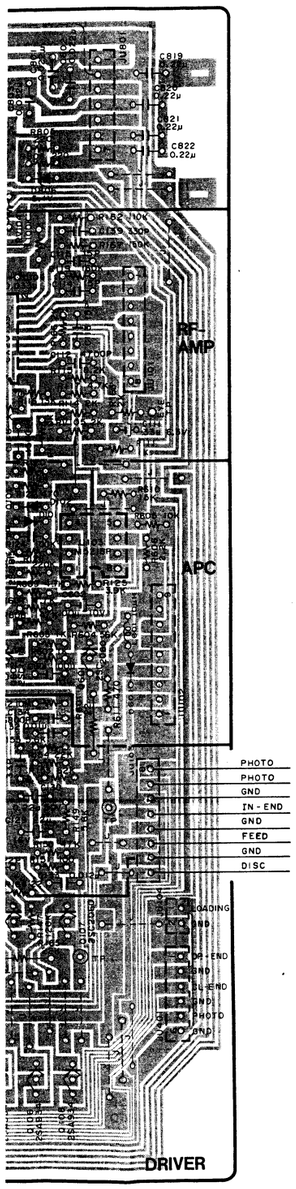
7.18. Main P.C.B. Ass'y
(This P.C.B. is for the units with serial No. from 01037.)

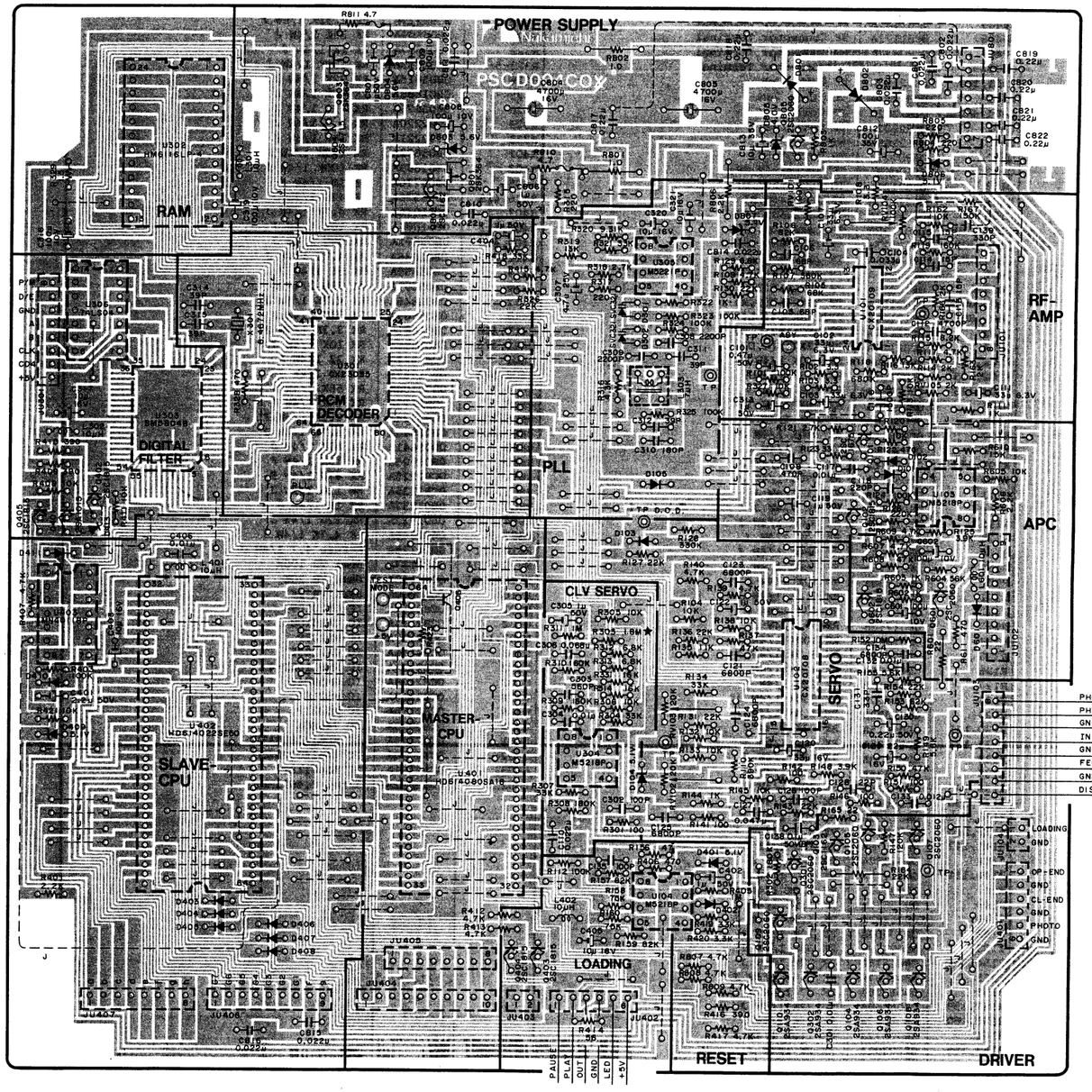


Schematic Ref No.	Part No.	Description	Schematic Ref No.	Part No.	
	CA80485B	Main P.C.B. Ass'y	JU103	0C82087A	8P
	0C82041A	Main P.C.B.	JU104	0C81161A	2P
B1	0C81033A	BT 3x8 + Binding	JU301	0C80837A	8P
B2	0E00857A	BT 3x6 + Binding	JU401,2	0C80836A	6P
C101	0C82189A	CE 0.47u 50V G	JU403	0C81161A	2P
C102,103	0B40047A	CE 33u 6.3V	JU404	0C82026A	10
C104	0B05531A	CM 0.033u 50V	JU405	0C82087A	8P
C105,106	0C82181A	C 68P 50V	JU406	0C81173A	9P
C107	0B40047A	CE 33u 6.3V	JU407	0C80837A	8P
C108	0C82196A	CM 470P 50V J	JU801	0C81172A	7P
C110	0B04062A	CM 0.022u 50V	L301,302	0C82202A	RF
C111	0B40047A	CE 33u 6.3V	L303	0C82203A	VC
C112	0B05652A	CM 4700P 50V	L401,402	0C82202A	RF
C113-5	0C82182A	C 15P 50V	L601	0C82202A	RF
C116	0C80808A	CM 1500P 50V	N0401	0C82166A	Wi
C117	0B05681A	CM 0.01u 50V	Q101	0C80741A	TR
C118	0C82197A	CM 220P 50V J	Q102	0B10088A	TR
C119	0B01405A	CE 1u 50V	Q103	0C82131A	TR
C120	0C80801A	CE 33u 16V	Q104	0C82128A	TR
C121	0B05701A	CM 6800P 50V	Q105,107	0C82127A	TR
C122	0B01405A	CE 1u 50V	Q106,108	0C82128A	TR
C123-5	0B05701A	CM 6800P 50V	Q109,301	0C82127A	TR
C126	0C82198A	CM 100P 50V J	Q110,302	0C82128A	TR
C127	0B05811A	CM 0.047u 50V	Q401	0B10116A	TR
C128	0C82183A	C 22P 50V	Q402-6	0B10088A	TR
C129	0B01862A	CE 22u 16V	Q601,805	0C82127A	TR
C130	0B40252A	CE 0.22u 50V	Q801,803	0B10151A	FE
C131	0C82184A	C 33P 50V	Q802	0C82131A	TR
C132	0B05681A	CM 0.01u 50V	Q804	0C82129A	TR
C133	0B01605A	CM 0.012 50V	R101,112	0B01889A	RK
C134	0B05701A	CM 6800P 50V	R102,103	0B09304A	RK
C135	0C82198A	CM 100P 50V J	R104,113	0B01888A	RK
C138	0B40237A	CE 0.1u 50V (BP)	R105	0B05692A	RK
C139	0C82199A	CM 330P 50V	R106	0B05668A	RK
C301	0B05681A	CM 0.01u 50V	R107	0C82214A	RK
C302	0C82199A	CM 100P 50V J	R108	0B09304A	RK
C303	0C82200A	CM 560P 50V J	R109,117	0B01846A	RK
C304	0B05681A	CM 0.01u 50V	R110	0B05676A	RK
C305	0B01405A	CE 1u 50V	R111	0B01857A	RK
C306	0B05682A	CM 0.068u 50V	R114	0B09301A	RK
C307	0B01402A	CE 4.7u 25V	R115	0B01856A	RK
C308,309	0B04060A	CM 2200P 50V	R116	0B09135A	RK
C310	0C82187A	CC 180P 50V (UJ)	R118	0B05868A	RK
C311,312	0C82188A	CC 39P 50V (UJ)	R119	0C82215A	RK
C313	0B01405A	CE 1u 50V	R120	0B01888A	RK
C314,315	0C82185A	C 39P 50V	R121	0B05629A	RK
£316	0B05885A	CE 100u 10V	R122	0B05576A	RK
C317	0B01412A	CE 10u 16V	R123	0B01713A	RK
C319	0B05885A	CE 100u 10V	R124	0B01889A	RK
C320,321	0B01412A	CE 10u 16V	R125	0B05675A	RK
C401	0B09372A	CE 2.2u 50V	R126	0B05625A	RK
C402	0B09814A	CE 1u 50V (LN)	R127	0B05615A	RK
C403	0B01412A	CE 10u 16V	R128	0B05627A	RK
C404	0B01405A	CE 1u 50V	R129	0B01682A	RK
C405	0B01412A	CE 10u 16V	R130,131	0B05615A	RK
C406	0B05681A	CM 0.01u 50V	R132,133	0B01888A	RK
C406	0C82200A	CM 560P 50V J	R134	0B05509A	RK
C601,602	0C80799A	CE 100u 10V	R135	0B09334A	RK
C801-3	0B04062A	CM 0.022u 50V	R136,143	0B05615A	RK
C804,805	0B40085A	CE 4700u 16V	R137,150	0B05641A	RK
C806,807	0B01405A	CE 1u 50V	R138,145	0B01888A	RK
C808,809	0C80799A	CE 100u 10V	R139,140	0B01846A	RK
C810,811	0B04062A	CM 0.022u 50V	R141,142	0B01679A	RK
C812	0B09126A	CE 100u 35V	R144	0B01857A	RK
C813	0B40336A	CE 10u 35V	R146,151	0B01679A	RK
C814-6	0B04062A	CM 0.022u 50V	R147	0B05621A	RK
C817-22	0B09872A	CF 0.22u 50V J	R148	0B05675A	RK
D101,102	0B12363A	SiD MA700	R149	0B01887A	RK
D103	0C82107A	SiD MA165	R152	0B20002A	RK
D104	0C82112A	ZD 5.1V MA4051(M)	R153	0B09369A	RK
D105	0C82107A	SiD MA165	R154,164	0B05615A	RK
D301,302	0C80823A	Varicap SVC321	R155	0B01887A	RK
D401	0C82112A	ZD 5.1V MA4051(M)	R156	0B01706A	RK
D402-8	0C82107A	SiD MA165	R157,159	0B05668A	RK
D409	0C82112A	ZD 5.1V MA4051(M)	R158,160	0B09517A	RK
D410,11,13	0C82107A	SiD MA165	R162	0B09072A	RK
D601	0C82107A	SiD MA165	R163,166	0B09301A	RK
D801,802	0C82109A	SiD W02RL	R164	0B05615A	RK
D803,804	0C82110A	ZD 5.6V MA4056(M)	R165	0C82204A	RM
D805	0C82111A	ZD 4.0V MA4240(L)	R167	0B05626A	RK
D806,807	0C82112A	ZD 5.1V MA4051(M)	R301	0B01679A	RK
EP01	0C82164A	Earth Plate	R302,308	0B05640A	RK
EW 1	0C82165A	Earth Wire	R303*	0B05680A	RK
HS101	0C82053A	Heatsink for Q103	R304,307	0B05509A	RK
HS801,802	0C82054A	Heatsink for Q802,84	R305,306	0B01888A	RK
JU101	0C80837A	8P Connector Terminal	R309,310	0C82215A	RK
JU102	0C81173A	9P Connector Terminal	R311	0B05776A	RK

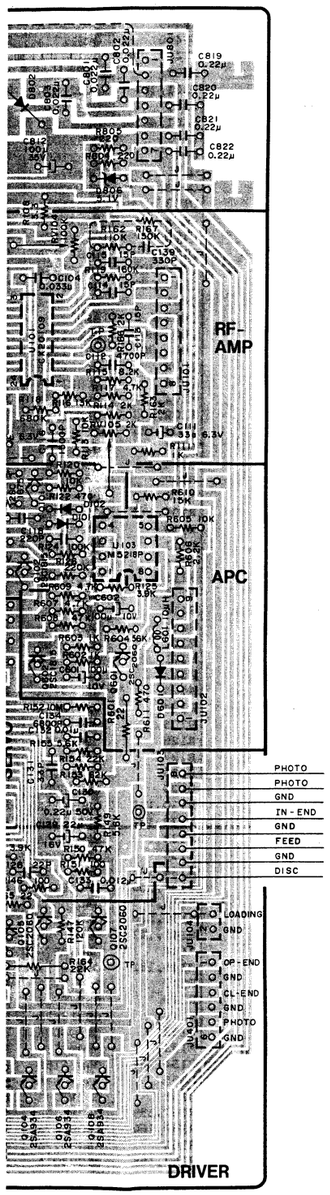


Schematic Ref No.	Part No.	Description
	CA80485B	Main P.C.B. Ass'y
	0C82041A	Main P.C.B.
B1	0C81033A	BT 3x8 + Binding
B2	0E00857A	BT 3x6 + Binding
C101	0C82189A	CE 0.47u 50V G
C102,103	0B40047A	CE 33u 6.3V
C104	0B05531A	CM 0.033u 50V
C105,106	0C82181A	C 68P 50V
C107	0B40047A	CE 33u 6.3V
C108	0C82196A	CM 470P 50V J
C110	0B04062A	CM 0.022u 50V
C111	0B40047A	CE 33u 6.3V
C112	0B05652A	CM 4700P 50V
C113-5	0C82182A	C 15P 50V
C116	0C80808A	CM 1500P 50V
C117	0B05681A	CM 0.01u 50V
C118	0C82197A	CM 220P 50V J
C119	0B01405A	CE 1u 50V
C120	0C80801A	CE 33u 16V
C121	0B05701A	CM 6800P 50V
C122	0B01405A	CE 1u 50V
C123-5	0B05701A	CM 6800P 50V
C126	0C82198A	CM 100P 50V J
C127	0B05811A	CM 0.047u 50V
C128	0C82183A	C 22P 50V
C129	0B01862A	CE 22u 16V
C130	0B40252A	CE 0.22u 50V
C131	0C82184A	C 33P 50V
C132	0B05681A	CM 0.01u 50V
C133	0B01605A	CM 0.012 50V
C134	0B05701A	CM 6800P 50V
C135	0C82198A	CM 100P 50V J
C138	0B40237A	CE 0.1u 50V (BP)
C139	0C82199A	CM 330P 50V
C301	0B05681A	CM 0.01u 50V
C302	0C82199A	CM 100P 50V J
C303	0C82200A	CM 560P 50V J
C304	0B05681A	CM 0.01u 50V
C305	0B01405A	CE 1u 50V
C306	0B05682A	CM 0.068u 50V
C307	0B01402A	CE 4.7u 25V
C308,309	0B04060A	CM 2200P 50V
C310	0C82187A	CC 180P 50V (UJ)
C311,312	0C82188A	CC 39P 50V (UJ)
C313	0B01405A	CE 1u 50V
C314,315	0C82185A	C 39P 50V
£316	0B05885A	CE 100u 10V
C317	0B01412A	CE 10u 16V
C319	0B05885A	CE 100µ 10V
C320,321	0B01412A	CE 10u 16V
C401	0B09372A	CE 2.2u 50V
C402	0B09814A	CE 1u 50V (LN)
C403	0B01412A	CE 10u 16V
C404	0B01405A	CE 1u 50V
C405	0B01412A	CE 10u 16V
C406	0B05681A	CM 0.01u 50V
C406	0C82200A	CM 560P 50V J
C601,602	0C80799A	CE 100u 10V
C801-3	0B04062A	CM 0.022u 50V
C804,805	0B40085A	CE 4700u 16V
C806,807	0B01405A	CE 1u 50V
C808,809	0C80799A	CE 100u 10V
C810,811	0B04062A	CM 0.022u 50V
C812	0B09126A	CE 100u 35V
C813	0B40336A	CE 10u 35V
C814-6	0B04062A	CM 0.022u 50V
C817-22	0B09872A	CF 0.22u 50V J
D101,102	0B12363A	SiD MA700
D103	0C82107A	SiD MA165
D104	0C82112A	ZD 5.1V MA4051(M)
D105	0C82107A	SiD MA165
D301,302	0C80823A	Varicap SVC321
D401	0C82112A	ZD 5.1V MA4051(M)
D402-8	0C82107A	SiD MA165
D409	0C82112A	ZD 5.1V MA4051(M)
D410,11,13	0C82107A	SiD MA165
D601	0C82107A	SiD MA165
D801,802	0C82109A	SiD W02RL
D803,804	0C82110A	ZD 5.6V MA4056(M)
D805	0C82111A	ZD 4.0V MA4240(L)
D806,807	0C82112A	ZD 5.1V MA4051(M)
EP01	0C82164A	Earth Plate
EW 1	0C82165A	Earth Wire
HS101	0C82053A	Heatsink for Q103
HS801,802	0C82054A	Heatsink for Q802,84
JU101	0C80837A	8P Connector Terminal
JU102	0C81173A	9P Connector Terminal
JU103	0C82087A	8P Connector Terminal
JU104	0C81161A	2P Connector Terminal
JU301	0C80837A	8P Connector Terminal
JU401,2	0C80836A	6P Connector Terminal
JU403	0C81161A	2P Connector Terminal
JU404	0C82026A	10P Connector Terminal
JU405	0C82087A	8P Connector Terminal
JU406	0C81173A	9P Connector Terminal
JU407	0C80837A	8P Connector Terminal
JU801	0C81172A	7P Connector Terminal
L301,302	0C82202A	RF Coil 10uH
L303	0C82203A	VCO Coil 7uH
L401,402	0C82202A	RF Coil 10uH
L601	0C82202A	RF Coil 10uH
N0401	0C82166A	Wire
Q101	0C80741A	TR 2SC1675(K)
Q102	0B10088A	TR 2SC1815(Y,GR)
Q103	0C82131A	TR 2SC1162(C,D)
Q104	0C82128A	TR 2SA934(Q,R)
Q105,107	0C82127A	TR 2SC2060(Q,R)
Q106,108	0C82128A	TR 2SA934(Q,R)
Q109,301	0C82127A	TR 2SC2060(Q,R)
Q110,302	0C82128A	TR 2SA934(Q,R)
Q401	0B10116A	TR 2SA1015(Y,GR)
Q402-6	0B10088A	TR 2SC1815(Y,GR)
Q601,805	0C82127A	TR 2SC2060(Q,R)
Q801,803	0B10151A	FET 2SK364(BL)
Q802	0C82131A	TR 2SC1162(C,D)
Q804	0C82129A	TR 2SA715(C,D)
R101,112	0B01889A	RK 100K 1/4W J
R102,103	0B09304A	RK 3.3 1/4W J
R104,113	0B01888A	RK 10K 1/4W J
R105	0B05692A	RK 68K 1/4W J
R106	0B05668A	RK 82K 1/4W J
R107	0C82214A	RK 360K 1/4W J
R108	0B09304A	RK 3.3 1/4W J
R109,117	0B01846A	RK 4.7K 1/4W J
R110	0B05676A	RK 390K 1/4W J
R111	0B01857A	RK 1K 1/4W J
R114	0B09301A	RK 2K 1/4W J
R115	0B01856A	RK 8.2K 1/4W J
R116	0B09135A	RK 13K 1/4W J
R118	0B05868A	RK 680K 1/4W J
R119	0C82215A	RK 160K 1/4W J
R120	0B01888A	RK 10K 1/4W J
R121	0B05629A	RK 2.7K 1/4W J
R122	0B05576A	RK 470 1/4W J
R123	0B01713A	RK 33 1/4W J
R124	0B01889A	RK 100K 1/4W J
R125	0B05675A	RK 3.9K 1/4W J
R126	0B05625A	RK 220K 1/4W J
R127	0B05615A	RK 22K 1/4W J
R128	0B05627A	RK 330K 1/4W J
R129	0B01682A	RK 6.8K 1/4W J
R130,131	0B05615A	RK 22K 1/4W J
R132,133	0B01888A	RK 10K 1/4W J
R134	0B05509A	RK 33K 1/4W J
R135	0B09334A	RK 11K 1/4W J
R136,143	0B05615A	RK 22K 1/4W J
R137,150	0B05641A	RK 47K 1/4W J
R138,145	0B01888A	RK 10K 1/4W J
R139,140	0B01846A	RK 4.7K 1/4W J
R141,142	0B01679A	RK 100 1/4W J
R144	0B01857A	RK 1K 1/4W J
R146,151	0B01679A	RK 100 1/4W J
R147	0B05621A	RK 120K 1/4W J
R148	0B05675A	RK 3.9K 1/4W J
R149	0B01887A	RK 5.6K 1/4W J
R152	0B20002A	RK 10M 1/4W J
R153	0B09369A	RK 62K 1/4W J
R154,164	0B05615A	RK 22K 1/4W J
R155	0B01887A	RK 5.6K 1/4W J
R156	0B01706A	RK 47 1/4W J
R157,159	0B05668A	RK 82K 1/4W J
R158,160	0B09517A	RK 75K 1/4W J
R162	0B09072A	RK 110K 1/4W J
R163,166	0B09301A	RK 2K 1/4W J
R164	0B05615A	RK 22K 1/4W J
R165	0C82204A	RM 22 1/2W J
R167	0B05626A	RK 150K 1/4W
R301	0B01679A	RK 100 1/4W J
R302,308	0B05640A	RK 180K 1/4W J
R303*	0B05680A	RK 1.8M 1/4W J
R304,307	0B05509A	RK 33K 1/4W J
R305,306	0B01888A	RK 10K 1/4W J
R309,310	0C82215A	RK 160K 1/4W J
R311	0B05776A	RK 1M 1/4W J
R312,313	0B01682A	RK 6.8K 1/4W J
R314	0C82216A	RK 16K 1/4W J
R315,317	0C82217A	RK 220 1/8W F
R316	0B09307A	RK 4.3K 1/4W J
R318	0B05629A	RK 2.7K 1/4W J
R319	0C82218A	RK 13K 1/8W F
R320	0C82219A	RK 9.31K 1/8W F
R321	0B05509A	RK 33K 1/4W J
R322	0B01857A	RK 1K 1/4W J
R323-5	0B01889A	RK 100K 1/4W J
R326	0B05615A	RK 22K 1/4W J
R327	0B01888A	RK 10K 1/4W J
R328	0B05576A	RK 470 1/4W J
R329	0C82220A	RK 1.5 1/4W J
R331	0C82221A	RK 16K 1/4W J
R401	0B05622A	RK 2.2K 1/4W J
R403	0B01889A	RK 100K 1/4W J
R405	0B05776A	RK 1M 1/4W J
R406,415	0B05576A	RK 470 1/4W J
R407	0B01846A	RK 4.7K 1/4W J
R408,411	0B01888A	RK 10K 1/4W J
R409,410	0B05691A	RK 390 1/4W J
R412,413	0B01846A	RK 4.7K 1/4W J
R414	0B05890A	RK 56 1/4W J
R416	0B05691A	RK 390 1/4W J
R417	0B01846A	RK 4.7K 1/4W J
R418	0B05509A	RK 33K 1/4W J
R419,420	0B01681A	RK 3.3K 1/4W J
R421,423	0B01888A	RK 10K 1/4W J
R601	0C82222A	RK 22 1/4W F
R602,603	0B01857A	RK 1K 1/4W J
R604	0B05508A	RK 56K 1/4W J
R605	0C82223A	RK 10K 1/4W F
R606,806	0C82224A	RK 2.2K 1/4W F
R607,609	0B01846A	RK 4.7K 1/4W J
R608	0B05641A	RK 47K 1/4W J
R610	0B09705A	RK 15K 1/4W F
R611	0C82225A	RK 470 1/4W F
R801,802	0C82226A	RM 1.0 1/2W J
R803	0B01857A	RK 1K 1/4W J
R804,805	0B01933A	RK 220 1/4W J
R807-9	0B01846A	RK 4.7K 1/4W J
R810,811	0B24125A	R-Fuse 4.7 1/4W J
RV101,104	0C82137A	Semi VR 100K
RV102,103	0C82138A	Semi VR 20K
RV105	0C80888A	Semi VR 2K
U101	0C82114A	IC CX20109
U102	0C82115A	IC CX20108
U103,104	0C82117A	IC M5218P
U301	0C82116A	IC CX23035
U302	0C82124A	IC HM6116LP-4
U303	0C82125A	IC SM5804B
U304	0C82117A	IC M5218P
U305	0C82118A	IC M5221P
U306	0C80880A	IC 74LS04
U401	0C82119A	IC HD614080SA18
U402	0C82120A	IC HD614022SE50
U403	0C82121A	IC MN4011BP
X301	0C82212A	X'tal 8.4672MHz

7.18. Main P.C.B. Ass'y
(This P.C.B. is for the units with serial No. up to 01037.)

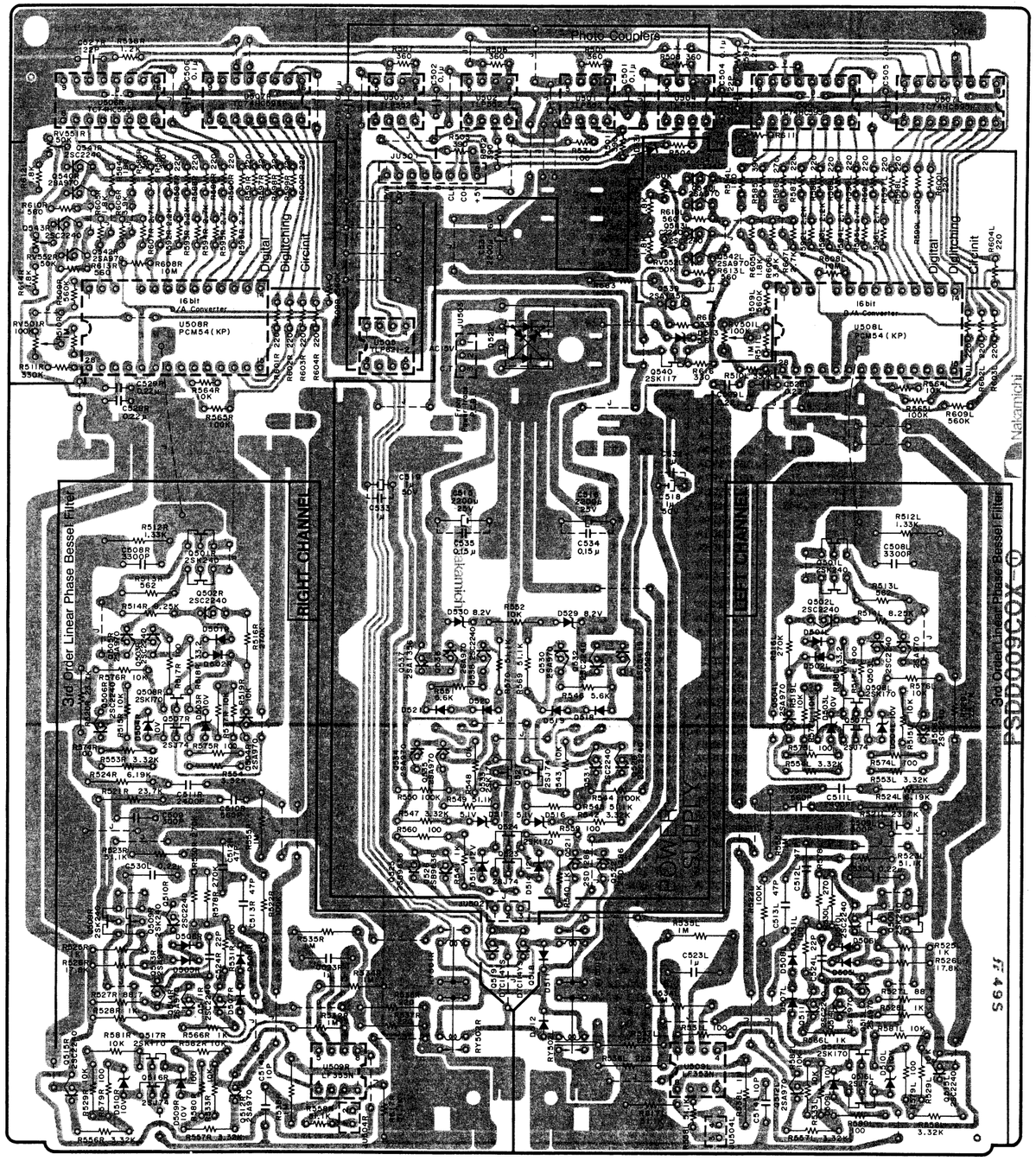


Schematic Ref No.	Part No.	Description	Schematic Ref No.	Part No.
	CA80485A	Main P.C.B. Ass'y	JU103	0C82087A
	0C82041A	Main P.C.B.	JU104	0C81161A
B1	0C81033A	BT 3x8 + Binding	JU301	0C80837A
B2	0E00857A	BT 3x6 + Binding	JU401,2	0C80836A
C101	0C82189A	CE 0.47u 50V G	JU403	0C81161A
C102,103	0B40047A	CE 33u 6.3V	JU404	0C82026A
C104	0B05531A	CM 0.033u 50V	JU405	0C82087A
C105,106	0C82181A	C 68P 50V	JU406	0C81173A
C107	0B40047A	CE 33u 6.3V	JU407	0C80837A
C108	0C82196A	CM 470P 50V J	JU801	0C81172A
C110	0B04062A	CM 0.022u 50V	L301,302	0C82202A
C111	0B40047A	CE 33u 6.3V	L303	0C82203A
C112	0B05652A	CM 4700P 50V	L401,402	0C82202A
C113-5	0C82182A	C 15P 50V	L601	0C82202A
C116	0C80808A	CM 1500P 50V	N0401	0C82166A
C117	0B05681A	CM 0.01u 50V	Q101	0C80741A
C118	0C82197A	CM 220P 50V J	Q102	0B10088A
C119	0B01405A	CE 1u 50V	Q103	0C82131A
C120	0C80801A	CE 33u 16V	Q104	0C82128A
C121	0B05701A	CM 6800P 50V	Q105,107	0C82127A
C122	0B01405A	CE 1u 50V	Q106,108	0C82128A
C123-5	0B05701A	CM 6800P 50V	Q109,301	0C82127A
C126	0C82198A	CM 100P 50V J	Q110,302	0C82128A
C127	0B05811A	CM 0.047u 50V	Q401	0B10116A
C128	0C82183A	C 22P 50V	Q402-6	0B10088A
C129	0B01862A	CE 22u 16V	Q601,805	0C82127A
C130	0B40252A	CE 0.22u 50V	Q801,803	0B10151A
C131	0C82184A	C 33P 50V	Q802	0C82131A
C132	0B05681A	CM 0.01u 50V	Q804	0C82129A
C133	0B01605A	CM 0.012 50V	R101,112	0B01889A
C134	0B05701A	CM 6800P 50V	R102,103	0B09304A
C135	0C82198A	CM 100P 50V J	R104,113	0B01888A
C138	0B40237A	CE 0.1u 50V (BP)	R105	0B05692A
C139	0C82199A	CM 330P 50V	R106	0B05668A
C301	0B05681A	CM 0.01u 50V	R107	0C82214A
C302	0C82199A	CM 100P 50V J	R108	0B09304A
C303	0C82200A	CM 560P 50V J	R109,117	0B01846A
C304	0B05681A	CM 0.01u 50V	R110	0B05676A
C305	0B01405A	CE 1u 50V	R111	0B01857A
C306	0B05682A	CM 0.068u 50V	R114	0B09301A
C307	0B01402A	CE 4.7u 25V	R115	0B01856A
C308,309	0B04060A	CM 2200P 50V	R116	0B09135A
C310	0C82187A	CC 180P 50V (UJ)	R118	0B05868A
C311,312	0C82188A	CC 39P 50V (UJ)	R119	0C82215A
C313	0B01405A	CE 1u 50V	R120	0B01888A
C314,315	0C82185A	C 39P 50V	R121	0B05629A
C316	0B05685A	CE 100u 10V	R122	0B05576A
C317	0B01412A	CE 10u 16V	R123	0B01713A
C319	0B05885A	CE 100u 10V	R124	0B01889A
C320,321	0B01412A	CE 10u 16V	R125	0B05675A
C401	0B09372A	CE 2.2u 50V	R126	0B05625A
C402	0B09814A	CE 1u 50V (LN)	R127	0B05615A
C403	0B01412A	CE 10u 16V	R128	0B05627A
C404	0B01405A	CE 1u 50V	R129	0B01682A
C405	0B01412A	CE 10u 16V	R130,131	0B05615A
C406	0B05681A	CM 0.01u 50V	R132,133	0B01888A
C406	0C82200A	CM 560P 50V J	R134	0B05509A
C601,602	0C80799A	CE 100u 10V	R135	0B09334A
C801-3	0B04062A	CM 0.022u 50V	R136,143	0B05615A
C804,805	0B40085A	CE 4700u 16V	R137,150	0B05641A
C806,807	0B01405A	CE 1u 50V	R138,145	0B01888A
C808,809	0C80799A	CE 100u 10V	R139,140	0B01846A
C810,811	0B04062A	CM 0.022u 50V	R141,142	0B01679A
C812	0B09126A	CE 100u 35V	R144	0B01857A
C813	0B40336A	CE 10u 35V	R146,151	0B01679A
C814-6	0B04062A	CM 0.022u 50V	R147	0B05621A
C817-22	0B09872A	CF 0.22u 50V J	R148	0B05675A
D101,102	0B12363A	SiD MA700	R149	0B01887A
D103	0C82107A	SiD MA165	R152	0B20002A
D104	0C82112A	ZD 5.1V MA4051(M)	R153	0B09369A
D105	0C82107A	SiD MA165	R154,164	0B05615A
D301,302	0C80823A	Varicap SVC321	R155	0B01887A
D401	0C82112A	ZD 5.1V MA4051(M)	R156	0B01706A
D402-8	0C82107A	SiD MA165	R157,159	0B05668A
D409	0C82112A	ZD 5.1V MA4051(M)	R158,160	0B09517A
D410,11,13	0C82107A	SiD MA165	R162	0B09072A
D601	0C82107A	SiD MA165	R163,166	0B09301A
D801,802	0C82109A	SiD W02RL	R164	0B05615A
D803,804	0C82110A	ZD 5.6V MA4056(M)	R165	0C82204A
D805	0C82111A	ZD 4.0V MA4240(L)	R167	0B05626A
D806,807	0C82112A	ZD 5.1V MA4051(M)	R301	0B01679A
EP01	0C82164A	Earth Plate	R302,308	0B0564OA
EW 1	0C82165A	Earth Wire	R303*	0B0568OA
HS101	0C82053A	Heatsink for Q103	R304,307	0B0550 9A
HS801,802	0C82054A	Heatsink for Q802,84	R305,306	0B0188 8A
JU101	0CB0837A	8P Connector Terminal	R309,310	0C82215A
JU102	0C81173A	9P Connector Terminal	R311	0B0577 6A

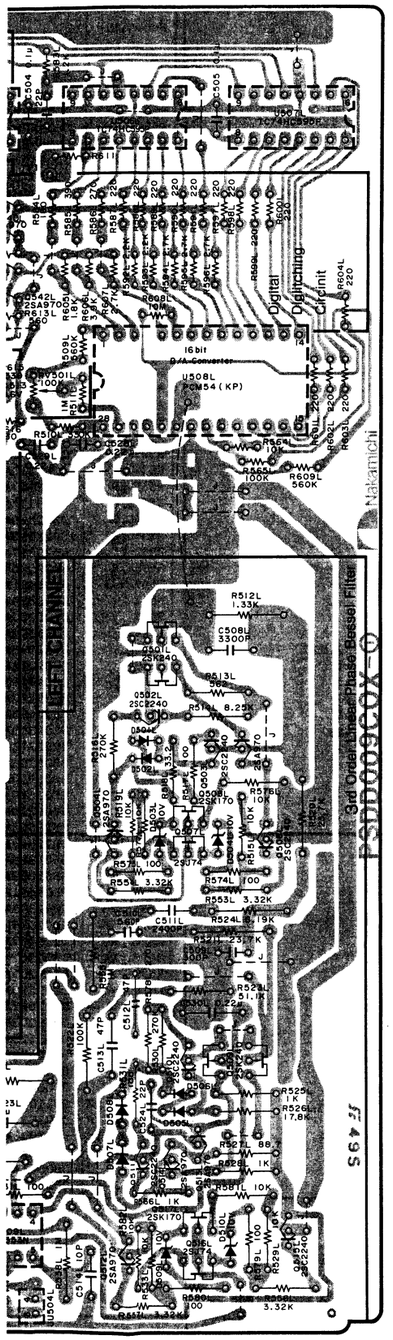


Schematic Ref No.	Part No.	Description
	CA80485A	Main P.C.B. Ass'y
	0C82041A	Main P.C.B.
B1	0C81033A	BT 3x8 + Binding
B2	0E00857A	BT 3x6 + Binding
C101	0C82189A	CE 0.47u 50V G
C102,103	0B40047A	CE 33u 6.3V
C104	0B05531A	CM 0.033u 50V
C105,106	0C82181A	C 68P 50V
C107	0B40047A	CE 33u 6.3V
C108	0C82196A	CM 470P 50V J
C110	0B04062A	CM 0.022u 50V
C111	0B40047A	CE 33u 6.3V
C112	0B05652A	CM 4700P 50V
C113-5	0C82182A	C 15P 50V
C116	0C80808A	CM 1500P 50V
C117	0B05681A	CM 0.01u 50V
C118	0C82197A	CM 220P 50V J
C119	0B01405A	CE 1u 50V
C120	0C80801A	CE 33u 16V
C121	0B05701A	CM 6800P 50V
C122	0B01405A	CE 1u 50V
C123-5	0B05701A	CM 6800P 50V
C126	0C82198A	CM 100P 50V J
C127	0B05811A	CM 0.047u 50V
C128	0C82183A	C 22P 50V
C129	0B01862A	CE 22u 16V
C130	0B40252A	CE 0.22u 50V
C131	0C82184A	C 33P 50V
C132	0B05681A	CM 0.01u 50V
C133	0B01605A	CM 0.012 50V
C134	0B05701A	CM 6800P 50V
C135	0C82198A	CM 100P 50V J
C138	0B40237A	CE 0.1u 50V (BP)
C139	0C82199A	CM 330P 50V
C301	0B05681A	CM 0.01u 50V
C302	0C82199A	CM 100P 50V J
C303	0C82200A	CM 560P 50V J
C304	0B05681A	CM 0.01u 50V
C305	0B01405A	CE 1u 50V
C306	0B05682A	CM 0.068u 50V
C307	0B01402A	CE 4.7u 25V
C308,309	0B04060A	CM 2200P 50V
C310	0C82187A	CC 180P 50V (UJ)
C311,312	0C82188A	CC 39P 50V (UJ)
C313	0B01405A	CE 1u 50V
C314,315	0C82185A	C 39P 50V
C316	0B05685A	CE 100u 10V
C317	0B01412A	CE 10u 16V
C319	0B05885A	CE 100u 10V
C320,321	0B01412A	CE 10u 16V
C401	0B09372A	CE 2.2u 50V
C402	0B09814A	CE 1u 50V (LN)
C403	0B01412A	CE 10u 16V
C404	0B01405A	CE 1u 50V
C405	0B01412A	CE 10u 16V
C406	0B05681A	CM 0.01u 50V
C406	0C82200A	CM 560P 50V J
C601,602	0C80799A	CE 100u 10V
C801-3	0B04062A	CM 0.022u 50V
C804,805	0B40085A	CE 4700u 16V
C806,807	0B01405A	CE 1u 50V
C808,809	0C80799A	CE 100u 10V
C810,811	0B04062A	CM 0.022u 50V
C812	0B09126A	CE 100u 35V
C813	0B40336A	CE 10u 35V
C814-6	0B04062A	CM 0.022u 50V
C817-22	0B09872A	CF 0.22u 50V J
D101,102	0B12363A	SiD MA700
D103	0C82107A	SiD MA165
D104	0C82112A	ZD 5.1V MA4051(M)
D105	0C82107A	SiD MA165
D301,302	0C80823A	Varicap SVC321
D401	0C82112A	ZD 5.1V MA4051(M)
D402-8	0C82107A	SiD MA165
D409	0C82112A	ZD 5.1V MA4051(M)
D410,11,13	0C82107A	SiD MA165
D601	0C82107A	SiD MA165
D801,802	0C82109A	SiD W02RL
D803,804	0C82110A	ZD 5.6V MA4056(M)
D805	0C82111A	ZD 4.0V MA4240(L)
D806,807	0C82112A	ZD 5.1V MA4051(M)
EP01	0C82164A	Earth Plate
EW 1	0C82165A	Earth Wire
HS101	0C82053A	Heatsink for Q103
HS801,802	0C82054A	Heatsink for Q802,84
JU101	0C80837A	8P Connector Terminal
JU102	0C81173A	9P Connector Terminal
JU103	0C82087A	8P Connector Terminal
JU104	0C81161A	2P Connector Terminal
JU301	0C80837A	8P Connector Terminal
JU401,2	0C80836A	6P Connector Terminal
JU403	0C81161A	2P Connector Terminal
JU404	0C82026A	10P Connector Terminal
JU405	0C82087A	8P Connector Terminal
JU406	0C81173A	9P Connector Terminal
JU407	0C80837A	8P Connector Terminal
JU801	0C81172A	7P Connector Terminal
L301,302	0C82202A	RF Coil 10uH
L303	0C82203A	VCO Coil 7uH
L401,402	0C82202A	RF Coil 10uH
L601	0C82202A	RF Coil 10uH
N0401	0C82166A	Wire
Q101	0C80741A	TR 2SC1675(K)
Q102	0B10088A	TR 2SC1815(Y,GR)
Q103	0C82131A	TR 2SC1162(C,D)
Q104	0C82128A	TR 2SA934(Q,R)
Q105,107	0C82127A	TR 2SC2060(Q,R)
Q106,108	0C82128A	TR 2SA934(Q,R)
Q109,301	0C82127A	TR 2SC2060(Q,R)
Q110,302	0C82128A	TR 2SA934(Q,R)
Q401	0B10116A	TR 2SA1015(Y,GR)
Q402-6	0B10088A	TR 2SC1815(Y,GR)
Q601,805	0C82127A	TR 2SC2060(Q,R)
Q801,803	0B10151A	FET 2SK364(BL)
Q802	0C82131A	TR 2SC1162(C,D)
Q804	0C82129A	TR 2SA715(C,D)
R101,112	0B01889A	RK 100K 1/4W J
R102,103	0B09304A	RK 3.3 1/4W J
R104,113	0B01888A	RK 10K 1/4W J
R105	0B05692A	RK 68K 1/4W J
R106	0B05668A	RK 82K 1/4W J
R107	0C82214A	RK 360K 1/4W J
R108	0B09304A	RK 3.3 1/4W J
R109,117	0B01846A	RK 4.7K 1/4W J
R110	0B05676A	RK 390K 1/4W J
R111	0B01857A	RK 1K 1/4W J
R114	0B09301A	RK 2K 1/4W J
R115	0B01856A	RK 8.2K 1/4W J
R116	0B09135A	RK 13K 1/4W J
R118	0B05868A	RK 680K 1/4W J
R119	0C82215A	RK 160K 1/4W J
R120	0B01888A	RK 10K 1/4W J
R121	0B05629A	RK 2.7K 1/4W J
R122	0B05576A	RK 470 1/4W J
R123	0B01713A	RK 33 1/4W J
R124	0B01889A	RK 100K 1/4W J
R125	0B05675A	RK 3.9K 1/4W J
R126	0B05625A	RK 220K 1/4W J
R127	0B05615A	RK 22K 1/4W J
R128	0B05627A	RK 330K 1/4W J
R129	0B01682A	RK 6.8K 1/4W J
R130,131	0B05615A	RK 22K 1/4W J
R132,133	0B01888A	RK 10K 1/4W J
R134	0B05509A	RK 33K 1/4W J
R135	0B09334A	RK 11K 1/4W J
R136,143	0B05615A	RK 22K 1/4W J
R137,150	0B05641A	RK 47K 1/4W J
R138,145	0B01888A	RK 10K 1/4W J
R139,140	0B01846A	RK 4.7K 1/4W J
R141,142	0B01679A	RK 100 1/4W J
R144	0B01857A	RK 1K 1/4W J
R146,151	0B01679A	RK 100 1/4W J
R147	0B05621A	RK 120K 1/4W J
R148	0B05675A	RK 3.9K 1/4W J
R149	0B01887A	RK 5.6K 1/4W J
R152	0B20002A	RK 10M 1/4W J
R153	0B09369A	RK 62K 1/4W J
R154,164	0B05615A	RK 22K 1/4W J
R155	0B01887A	RK 5.6K 1/4W J
R156	0B01706A	RK 47 1/4W J
R157,159	0B05668A	RK 82K 1/4W J
R158,160	0B09517A	RK 75K 1/4W J
R162	0B09072A	RK 110K 1/4W J
R163,166	0B09301A	RK 2K 1/4W J
R164	0B05615A	RK 22K 1/4W J
R165	0C82204A	RM 22 1/2W J
R167	0B05626A	RK 150K 1/4W
R301	0B01679A	RK 100 1/4W J
R302,308	0B05640A	RK 180K 1/4W J
R303*	0B05680A	RK 1.8M 1/4W J
R304,307	0B05509A	RK 33K 1/4W J
R305,306	0B01888A	RK 10K 1/4W J
R309,310	0C82215A	RK 160K 1/4W J
R311	0B05776A	RK 1M 1/4W J
R312,313	0B01682A	RK 6.8K 1/4W J
R314	0C82216A	RK 16K 1/4W J
R315,317	0C82217A	RK 220 1/8W F
R316	0B09307A	RK 4.3K 1/4W J
R318	0B05629A	RK 2.7K 1/4W J
R319	0C82218A	RK 13K 1/8W F
R320	0C82219A	RK 9.31K 1/8W F
R321	0B05509A	RK 33K 1/4W J
R322	0B01857A	RK 1K 1/4W J
R323-5	0B01889A	RK 100K 1/4W J
R326	0B05615A	RK 22K 1/4W J
R327	0B01888A	RK 10K 1/4W J
R328	0B05576A	RK 470 1/4W J
R329	0C82220A	RK 1.5 1/4W J
R331	0C82221A	RK 16K 1/4W J
R401	0B05622A	RK 2.2K 1/4W J
R403	0B01889A	RK 100K 1/4W J
R405	0B05776A	RK 1M 1/4W J
R406,415	0B05576A	RK 470 1/4W J
R407	0B01846A	RK 4.7K 1/4W J
R408,411	0B01888A	RK 10K 1/4W J
R409,410	0B05691A	RK 390 1/4W J
R412,413	0B01846A	RK 4.7K 1/4W J
R414	0B05890A	RK 56 1/4W J
R416	0B05691A	RK 390 1/4W J
R417	0B01846A	RK 4.7K 1/4W J
R418	0B05509A	RK 33K 1/4W J
R419,420	0B01681A	RK 3.3K 1/4W J
R421,423	0B01888A	RK 10K 1/4W J
R601	0C82222A	RK 22 1/4W F
R602,603	0B01857A	RK 1K 1/4W J
R604	0B05508A	RK 56K 1/4W J
R605	0C82223A	RK 10K 1/4W F
R606,806	0C82224A	RK 2.2K 1/4W F
R607,609	0B01846A	RK 4.7K 1/4W J
R608	0B05641A	RK 47K 1/4W J
R610	0B09705A	RK 15K 1/4W F
R611	0C82225A	RK 470 1/4W F
R801,802	0C82226A	RM 1.0 1/2W J
R803	0B01857A	RK 1K 1/4W J
R804,805	0B01933A	RK 220 1/4W J
R807-9	0B01846A	RK 4.7K 1/4W J
R810,811	0B24125A	R-Fuse 4.7 1/4W J
RV101,104	0C82137A	Semi VR 100K
RV102,103	0C82138A	Semi VR 20K
RV105	0C80888A	Semi VR 2K
U101	0C82114A	IC CX20109
U102	0C82115A	IC CX20108
U103,104	0C82117A	IC M5218P
U301	0C82116A	IC CX23035
U302	0C82124A	IC HM6116LP-4
U303	0C82125A	IC SM5804B
U304	0C82117A	IC M5218P
U305	0C82118A	IC M5221P
U306	0C80880A	IC 74LS04
U401	0C82119A	IC HD614080SA18
U402	0C82120A	IC HD614022SE50
U403	0C82121A	IC MN4011BP
X301	0C82212A	X'tal 8.4672MHz

7.19. D/A Converter P.C.B. Ass'y
(This P.C.B. is for the units with serial No. from 01037.)



Schematic Ref No.	Part No.	Description	Schematic Ref No.	Part No.	
	CA80486B	D/A Converter P.C.B. Ass'y	Q542L,R	0B06180A	T
	0C82027A	D/A Converter P.C.B.	Q543L,R	0B10078A	T
B501	0E00521A	M3x8 + Pan	R501-504	0B05691A	R
BP501	0C82172A	Bus-line Plate	R505-508	0B09326A	R
C501-6	0B41635A	CMM 0.1u 63V J	R509L,R	0B05784A	R
C508L,R	0B41731A	CM 3300P 100V J	R510L,R	0B05627A	R
C509L,R	0C82247A	CSP 300P 160V J	R511L,R	0B05776A	R
C510L,R	0C82248A	CSP 560P 160V J	R512L,R	0B20396A	R
C511L,R	0C82249A	CSP 2400P 100V G	R513L,R	0B22706A	R
C512L,R	0C82178A	C 47P 500V J	R514L,R	0B09432A	R
C513L,R	0C82178A	C 47P 500V J	R515L,R*	0B09356A	R
C514L,R	0C82179A	C 10P 500V J	R516L,R	0C82206A	R
C515,516	0B05654A	CE 2200u 25V	R517L,R	0B22567A	R
C518,519	0B01405A	CE 1u 50V	R518L,R	0C82207A	R
C523L,R	0C82192A	CM 1u 160V K	R519L,R*	0B09356A	R
C524L,R	0C82180A	C 22P 500V J	R520-1L,R	0B22588A	R
C527L,R	0B41507A	C 22P 50V J	R522L,R	0B22589A	R
C528L,R	0B09872A	CF 0.22u 50V	R523L,R	0B22595A	R
C529L,R	0B09872A	CF 0.22u 50V	R524L,R	0C82208A	R
C530L,R	0C82194A	CM 0.22u 100V K	R525L,R	0B09491A	R
C531	0C02191A	CE 2200u 16V B	R526L,R	0B09769A	R
C532,3	0B09880A	CF 1u 50V J	R527L,R	0C82209A	R
C534,5	0B09870A	CF 0.15u 50V J	R528L,R	0B09491A	R
D501-2L,R	0B06397A	SiD 1SS176	R529L,R*	0B09356A	R
D503-4L,R	0B12168A	ZD 10V RD10JSB2	R530L,R	0C82210A	R
D505-8L,R	0B06397A	SiD 1SS176	R531L,R	0B22567A	R
D509-10L,R	0B12168A	ZD 10V RD10JSB2	R533L,R*	0B09356A	R
D511,512	0B06397A	SiD 1SS176	R534L,R	0B22590A	R
D513	0B12150A	ZD 5.6V RD5.6JSB2	R535L,R	0B22590A	R
D514,515	0B12175A	ZD 12V RD122JSB3	R536-7L,R	0B20397A	R
D516,517	0B12147A	ZD 5.1V RD5.1SB2	R538L,R	0B22590A	R
D518-521	0B06397A	SiD 1SS176	R540,541	0B09491A	R
D522	0B82108A	SiD DBA10B	R542	0B09829A	R
D529,530	0B12162A	ZD 8.2V RD8.2JSB2	R543	0B09203A	R
D531	0C80877A	SiD MA150	R544	0B09305A	R
HS501-3	0C82055A	Heatsink for Q529,537,520	R545	0B22595A	R
JU501	0C80837A	8P Connector Terminal	R546	0C82211A	R
JU502	0C82089A	3P Connector Terminal	R547	0B09829A	R
JU503	0C80857A	3P Connector Terminal	R548	0B09203A	R
JU504L,R	0C80857A	3P Connector Terminal	R549	0B22595A	R
PJ501L	0C82173A	Output Pin Jack (White)	R550	0B09305A	R
PJ501R	0C82174A	Output Pin Jack (Red)	R551	0C82211A	R
Q501L,R	0B06257A	FET 2SK240(GR)	R552	0B09203A	R
Q502-3L,R	0B10078A	TR 2SC2240(GR)	R553-4L,R	0B09829A	R
Q504-5L,R	0B06180A	TR 2SA970(GR)	R555L,R	0B22590A	R
Q506L,R	0B10078A	TR 2SC2240(GR)	R556-7L,R	0B09829A	R
Q507L,R	0B10169A	FET 2SJ74(BL,V)	R558L,R	0B22595A	R
Q508L,R	0B10122A	FET 2SK170(BL,V)	R559,560	0B22567A	R
Q509L,R	0B06257A	FET 2SK240(GR)	R564L,R	0B01888A	R
Q510-11L,R	0B10078A	TR 2SC2240(GR)	R565L,R	0B01889A	R
Q512-14L,R	0B06180A	TR 2SA970(GR)	R566L,R	0B09491A	R
Q515L,R	0B10078A	TR 2SC2240(GR)	R569,570	0B22595A	R
Q516L,R	0B10169A	FET 2SJ74(BL,V)	R571	0B01679A	R
Q517L,R	0B10122A	FET 2SK170(BL,V)	R574L,R	0B22567A	R
Q518,519	0B10063A	TR DTC114YS	R575L,R	0B22567A	R
Q521,522	0B06371A	TR 2SD1286(L,K)	R576-7L,R	0B09203A	R
Q523,527	0B10169A	FET 2SJ74(BL,V)	R578L,R	0C82210A	R
Q524,533	0B10122A	FET 2SK170(BL,V)	R579-80L,R	0B22567A	R
Q525,526	0B10144A	TR 2SB963(L,K)	R581-2L,R	0B09203A	R
Q528	0B10078A	TR 2SC2240(GR)	R583L,R	0B05623A	R
Q529	0C82126A	TR 2SC3419(O,Y)	R584L,R	0B05578A	R
Q530,531	0B10078A	TR 2SC2240(GR)	R585L,R	0B05691A	R
Q532	0B06180A	TR 2SA970(GR)	R586L,R	0B05645A	R
Q534-6	0B06180A	TR 2SA970(GR)	R587-91L,R	0B11032A	R
Q537,539	0C82130A	TR 2SA1356(O,Y)	R592-96L,R	0B05622A	R
Q538	0B10078A	TR 2SC2240(GR)	R597-99L,R	0B01933A	R
Q540	0B10181A	FET 2SK117	R600-04L,R	0B01933A	R
Q540L,R	0B06180A	TR 2SA970(GR)	R605L,R	0B05614A	R
Q541L,R	0B10078A	TR 2SC2240(GR)	R606L,R	0B05675A	R

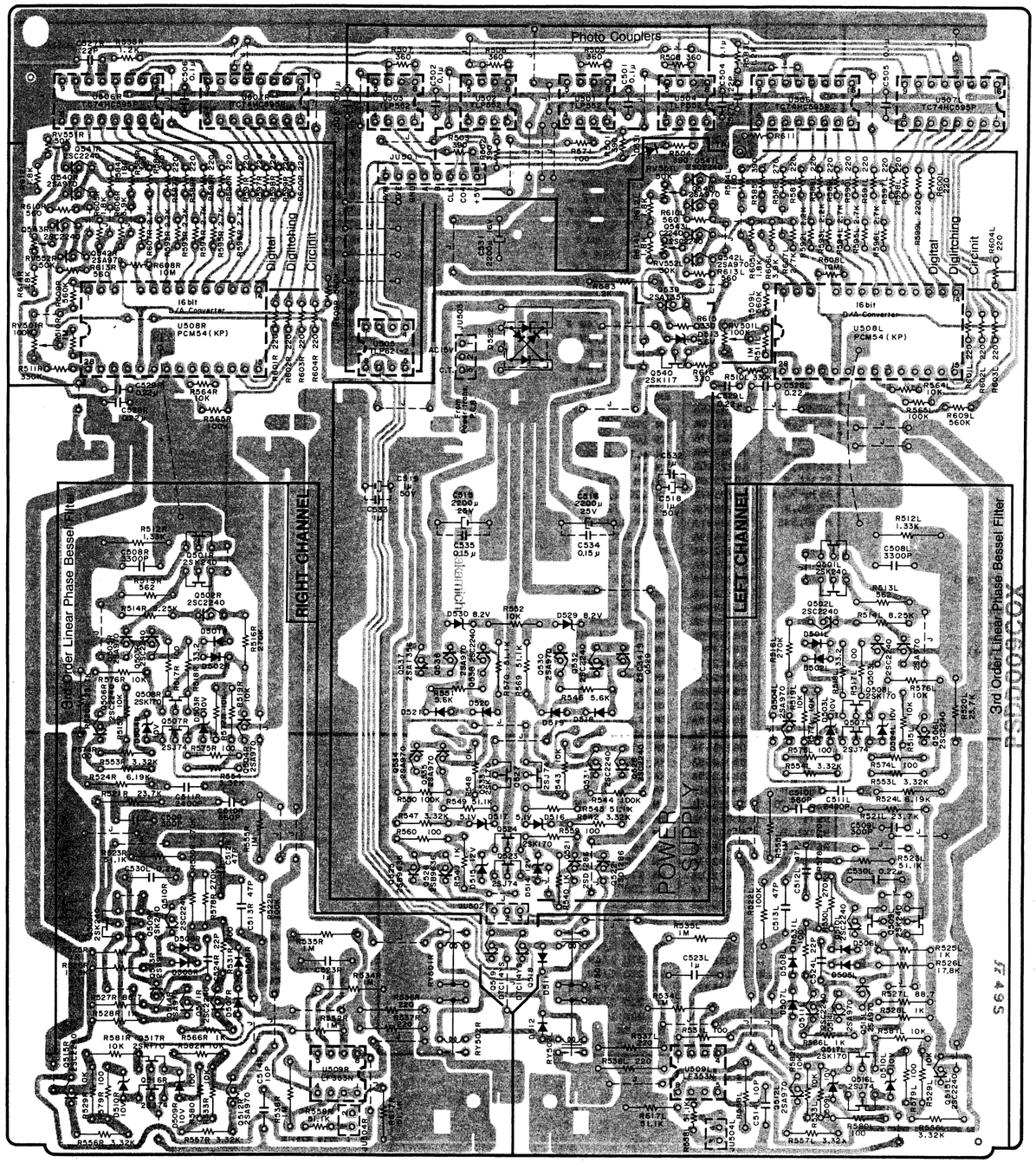


Schematic Ref No.	Part No.	Description	Schematic Ref No.	Part No.	Description	Schematic Ref No.	Part No.	Description
	CA80486B	D/A Converter P.C.B. Ass'y	Q542L,R	0B06180A	TR 2SA970(GR)	R607L,R	0B05629A	RK 2.7K 1/4W J
	0C82027A	D/A Converter P.C.B.	Q543L,R	0B10078A	TR 2SC2240(GR)	R608L,R	0B20002A	RK 10M 1/4W J
B501	0E00521A	M3x8 + Pan	R501-504	0B05691A	RK 390 1/4W J	R609L,R	0B05784A	RK 560K 1/4W J
BP501	0C82172A	Bus-line Plate	R505-508	0B09326A	RK 360 1/4W J	R610L,R	0B05575A	RK 560 1/4W J
C501-6	0B41635A	CMM 0.1u 63V J	R509L,R	0B05784A	RK 560K 1/4W J	R611	0B01888A	RK 10K 1/4W J
C508L,R	0B41731A	CM 3300P 100V J	R510L,R	0B05627A	RK 1M 1/4W J	R612L,R	0B05614A	RK 1.8K 1/4W J
C509L,R	0C82247A	CSP 300P 160V J	R511L,R	0B05776A	RK 330K 1/4W J	R613L,R	0B05575A	RK 560 1/4W J
C510L,R	0C82248A	CSP 560P 160V J	R512L,R	0B20396A	RM 1.33K 1/2W F	R614L,R	0B05614A	RK 1.8K 1/4W J
C511L,R	0C82249A	CSP 2400P 100V G	R513L,R	0B22706A	RM 562 1/4W F	R615,616	0B05577A	RK 330 1/4W J
C512L,R	0C82178A	C 47P 500V J	R514L,R	0B09432A	RM 8.25K 1/4W F	R617L,R	0B22595A	RM 51.1K 1/4W F
C513L,R	0C82178A	C 47P 500V J	R515L,R*	0B09356A	RM 4.7K 1/4W F	RV501L,R	0C82139A	Semi VR 100K
C514L,R	0C82179A	C 10P 500V J	R516L,R	0C82206A	RM 270K 1/4W F	RV551-2L,R	0C82140A	Semi VR 50K
C515,516	0B05654A	CE 2200u 25V	R517L,R	0B22567A	RM 100 1/4W F	RY501-2L,R	0C82135A	Relay HD1-M-DC24V
C518,519	0B01405A	CE 1u 50V	R518L,R	0C82207A	RM 33.2 1/4W F	TP1	0C82263A	Test Terminal
C523L,R	0C82192A	CM 1u 160V K	R519L,R*	0B09356A	RM 4.7K 1/4W F	U501-4	0C82133A	IC TLP552
C524L,R	0C82180A	C 22P 500V J	R520-1L,R	0B22588A	RM 23.7K 1/2W F	U505	0C82134A	IC TLP621-2
C527L,R	0B41507A	C 22P 50V J	R522L,R	0B22589A	RM 100K 1/2W F	U506-7L,R	0C82132A	IC TC74HC595P
C528L,R	0B09872A	CF 0.22u 50V	R523L,R	0B22595A	RM 51.1K 1/4W F	U508L,R	0C82123A	IC PCM54 (KP)
C529L,R	0B09872A	CF 0.22u 50V	R524L,R	0C82208A	RM 6.19K 1/2W F	U509L,R	0B11032A	IC LF353N
C530L,R	0C82194A	CM 0.22u 100V K	R525L,R	0B09491A	RM 1K 1/4W F	W501	0C82253A	Shielded Wire
C531	0C02191A	CE 2200u 16V B	R526L,R	0B09769A	RM 17.8K 1/4W F			
C532,3	0B09880A	CF 1u 50V J	R527L,R	0C82209A	RM 88.7 1/4W F			
C534,5	0B09870A	CF 0.15u 50V J	R528L,R	0B09491A	RM 1K 1/4W F			
D501-2L,R	0B06397A	SiD 1SS176	R529L,R*	0B09356A	RM 4.7K 1/4W F			
D503-4L,R	0B12168A	ZD 10V RD10JSB2	R530L,R	0C82210A	RM 270K 1/4W F			
D505-8L,R	0B06397A	SiD 1SS176	R531L,R	0B22567A	RM 100 1/4W F			
D509-10L,R	0B12168A	ZD 10V RD10JSB2	R533L,R*	0B09356A	RM 4.7K 1/4W F			
D511,512	0B06397A	SiD 1SS176	R534L,R	0B22590A	RM 1M 1/2W G			
D513	0B12150A	ZD 5.6V RD5.6JSB2	R535L,R	0B22590A	RM 1M 1/2W G			
D514,515	0B12175A	ZD 12V RD122JSB3	R536-7L,R	0B20397A	RM 220 1/2W J			
D516,517	0B12147A	ZD 5.1V RD5.1SB2	R538L,R	0B22590A	RM 1M 1/2W G			
D518-521	0B06397A	SiD 1SS176	R540,541	0B09491A	RM 1K 1/4W F			
D522	0B82108A	SiD DBA10B	R542	0B09829A	RM 3.32K 1/4W F			
D529,530	0B12162A	ZD 8.2V RD8.2JSB2	R543	0B09203A	RM 10K 1/4W F			
D531	0C80877A	SiD MA150	R544	0B09305A	RM 100K 1/4W F			
HS501-3	0C82055A	Heatsink for Q529,537,520	R545	0B22595A	RM 51.1K 1/4W F			
JU501	0C80837A	8P Connector Terminal	R546	0C82211A	RM 5.6K 1/4W F			
JU502	0C82089A	3P Connector Terminal	R547	0B09829A	RM 3.32K 1/4W F			
JU503	0C80857A	3P Connector Terminal	R548	0B09203A	RM 10K 1/4W F			
JU504L,R	0C80857A	3P Connector Terminal	R549	0B22595A	RM 51.1K 1/4W F			
PJ501L	0C82173A	Output Pin Jack (White)	R550	0B09305A	RM 100K 1/4W F			
PJ501R	0C82174A	Output Pin Jack (Red)	R551	0C82211A	RM 5.6K 1/4W F			
Q501L,R	0B06257A	FET 2SK240(GR)	R552	0B09203A	RM 10K 1/4W F			
Q502-3L,R	0B10078A	TR 2SC2240(GR)	R553-4L,R	0B09829A	RM 3.32K 1/4W F			
Q504-5L,R	0B06180A	TR 2SA970(GR)	R555L,R	0B22590A	RM 1M 1/2W G			
Q506L,R	0B10078A	TR 2SC2240(GR)	R556-7L,R	0B09829A	RM 3.32K 1/4W F			
Q507L,R	0B10169A	FET 2SJ74(BL,V)	R558L,R	0B22595A	RM 51.1K 1/4W F			
Q508L,R	0B10122A	FET 2SK170(BL,V)	R559,560	0B22567A	RM 100 1/4W F			
Q509L,R	0B06257A	FET 2SK240(GR)	R564L,R	0B01888A	RK 10K 1/4W J			
Q510-11L,R	0B10078A	TR 2SC2240(GR)	R565L,R	0B01889A	RK 100K 1/4W J			
Q512-14L,R	0B06180A	TR 2SA970(GR)	R566L,R	0B09491A	RM 1K 1/4W F			
Q515L,R	0B10078A	TR 2SC2240(GR)	R569,570	0B22595A	RM 51.1K 1/4W F			
Q516L,R	0B10169A	FET 2SJ74(BL,V)	R571	0B01679A	RK 100 1/4W J			
Q517L,R	0B10122A	FET 2SK170(BL,V)	R574L,R	0B22567A	RM 100 1/4W F			
Q518,519	0B10063A	TR DTC114YS	R575L,R	0B22567A	RM 100 1/4W F			
Q521,522	0B06371A	TR 2SD1286(L,K)	R576-7L,R	0B09203A	RM 10K 1/4W F			
Q523,527	0B10169A	FET 2SJ74(BL,V)	R578L,R	0C82210A	RM 270K 1/4W F			
Q524,533	0B10122A	FET 2SK170(BL,V)	R579-80L,R	0B22567A	RM 100 1/4W F			
Q525,526	0B10144A	TR 2SB963(L,K)	R581-2L,R	0B09203A	RM 10K 1/4W F			
Q528	0B10078A	TR 2SC2240(GR)	R583L,R	0B05623A	RK 1.2K 1/4W J			
Q529	0C82126A	TR 2SC3419(O,Y)	R584L,R	0B05578A	RK 180 1/4W J			
Q530,531	0B10078A	TR 2SC2240(GR)	R585L,R	0B05691A	RK 390 1/4W J			
Q532	0B06180A	TR 2SA970(GR)	R586L,R	0B05645A	RK 270 1/4W J			
Q534-6	0B06180A	TR 2SA970(GR)	R587-91L,R	0B11032A	RK 220 1/4W J			
Q537,539	0C82130A	TR 2SA1356(O,Y)	R592-96L,R	0B05622A	RK 2.2K 1/4W J			
Q538	0B10078A	TR 2SC2240(GR)	R597-99L,R	0B01933A	RK 220 1/4W J			
Q540	0B10181A	FET 2SK117	R600-04L,R	0B01933A	RK 220 1/4W J			
Q540L,R	0B06180A	TR 2SA970(GR)	R605L,R	0B05614A	RK 1.8K 1/4W J			
Q541L,R	0B10078A	TR 2SC2240(GR)	R606L,R	0B05675A	RK 3.9K 1/4W J			

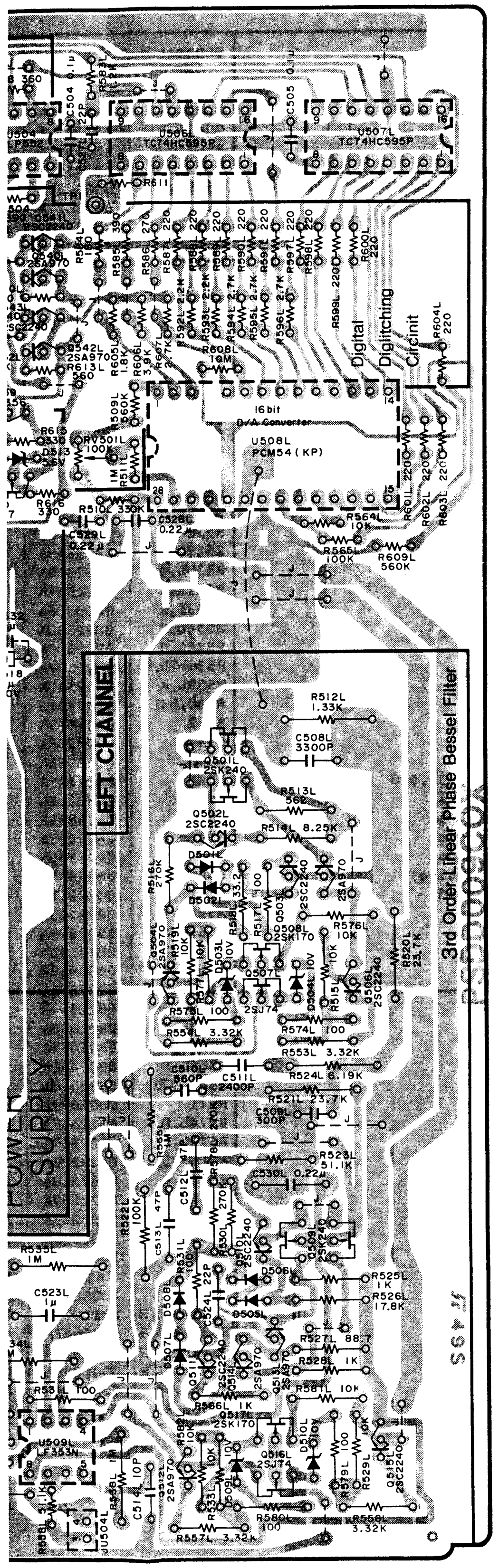
Parts marked* are 10k ohm for the units 1-2250.

Q507L,R, Q508L,R, Q517L,R, Q523/Q524, and Q527/Q533 are paired transistors. When one of them is damaged, replace it in the same rank (BL or V) as the paired one.
U508L,R are paired ICs. If only one of them is damaged, replace the IC pair.

7.19. D/A Converter P.C.B. Ass'y
(This P.C.B. is for the units with serial No. up to 01037.)



Schematic Ref No.	Part No.	Description	Schematic Ref No.	Part No.
	CA80486A	D/A Converter P.C.B. Ass'y	Q542L,R	0B06180A
	0C82027A	D/A Converter P.C.B.	Q543L,R	0B10078A
B501	0E00521A	M3x8 + Pan	R501-504	0B05691A
BP501	0C82172A	Bus-line Plate	R505-508	0B09326A
C501-6	0B41635A	CMM 0.1u 63V J	R509L,R	0B05784A
C508L,R	0B41731A	CM 3300P 100V J	R510L,R	0B05627A
C509L,R	0C82247A	CSP 300P 160V J	R511L,R	0B05776A
C510L,R	0C82248A	CSP 560P 160V J	R512L,R	0B20396A
C511L,R	0C82249A	CSP 2400P 100V G	R513L,R	0B22706A
C512L,R	0C82178A	C 47P 500V J	R514L,R	0B09432A
C513L,R	0C82178A	C 47P 500V J	R515L,R	0B09356A
C514L,R	0C82179A	C 10P 500V J	R516L,R	0C82206A
C515,516	0B05654A	CE 2200u 25V	R517L,R	0B22567A
C518,519	0B01405A	CE 1u 50V	R518L,R	0C82207A
C523L,R	0C82192A	CM 1u 160V K	R519L,R	0B09356A
C524L,R	0C82180A	C 22P 500V J	R520-1L,R	0B22588A
C527L,R	0B41507A	C 22P 50V J	R522L,R	0B22589A
C528L,R	0B09872A	CF 0.22u 50V	R523L,R	0B22595A
C529L,R	0B09872A	CF 0.22u 50V	R524L,R	0C82208A
C530L,R	0C82194A	CM 0.22u 100V K	R525L,R	0B09491A
C531	0C02191A	CE 2200u 16V B	R526L,R	0B09769A
C532,3	0B09880A	CF 1u 50V J	R527L,R	0C82209A
C534,5	0B09870A	CF 0.15u 50V J	R528L,R	0B09491A
D501-2L,R	0B06397A	SiD 1SS176	R529L,R	0B09356A
D503-4L,R	0B12168A	ZD 10V RD10JSB2	R530L,R	0C82210A
D505-8L,R	0B06397A	SiD 1SS176	R531L,R	0B22567A
D509-10L,R	0B12168A	ZD 10V RD10JSB2	R533L,R	0B09356A
D511,512	0B06397A	SiD 1SS176	R534L,R	0B22590A
D513	0B12150A	ZD 5.6V RD5.6JSB2	R535L,R	0B22590A
D514,515	0B12175A	ZD 12V RD122JSB3	R536-7L,R	0B20397A
D516,517	0B12147A	ZD 5.1V RD5.1SB2	R538L,R	0B22590A
D518-521	0B06397A	SiD 1SS176	R540,541	0B09491A
D522	0B82108A	SiD DBA10B	R542	0B09829A
D529,530	0B12162A	ZD 8.2V RD8.2JSB2	R543	0B09203A
D531	0C80877A	SiD MA150	R544	0B09305A
HS501-3	0C82055A	Heatsink for Q529,537,520	R545	0B22595A
JU501	0C80837A	8P Connector Terminal	R546	0C82211A
JU502	0C82089A	3P Connector Terminal	R547	0B09829A
JU503	0C80857A	3P Connector Terminal	R548	0B09203A
JU504L,R	0C80857A	3P Connector Terminal	R549	0B22595A
PJ501L	0C82173A	Output Pin Jack (White)	R550	0B09305A
PJ501R	0C82174A	Output Pin Jack (Red)	R551	0C82211A
Q501L,R	0B06257A	FET 2SK240(GR)	R552	0B09203A
Q502-3L,R	0B10078A	TR 2SC2240(GR)	R553-4L,R	0B09829A
Q504-5L,R	0B06180A	TR 2SA970(GR)	R555L,R	0B22590A
Q506L,R	0B10078A	TR 2SC2240(GR)	R556-7L,R	0B09829A
Q507L,R	0B10169A	FET 2SJ74(BL,V)	R558L,R	0B22595A
Q508L,R	0B10122A	FET 2SK170(BL,V)	R559,560	0B22567A
Q509L,R	0B06257A	FET 2SK240(GR)	R564L,R	0B01888A
Q510-11L,R	0B10078A	TR 2SC2240(GR)	R565L,R	0B01889A
Q512-14L,R	0B06180A	TR 2SA970(GR)	R566L,R	0B09491A
Q515L,R	0B10078A	TR 2SC2240(GR)	R569,570	0B22595A
Q516L,R	0B10169A	FET 2SJ74(BL,V)	R571	0B01679A
Q517L,R	0B10122A	FET 2SK170(BL,V)	R574L,R	0B22567A
Q518,519	0B10063A	TR DTC114YS	R575L,R	0B22567A
Q521,522	0B06371A	TR 2SD1286(L,K)	R576-7L,R	0B09203A
Q523,527	0B10169A	FET 2SJ74(BL,V)	R578L,R	0C82210A
Q524,533	0B10122A	FET 2SK170(BL,V)	R579-80L,R	0B22567A
Q525,526	0B10144A	TR 2SB963(L,K)	R581-2L,R	0B09203A
Q528	0B10078A	TR 2SC2240(GR)	R583L,R	0B05623A
Q529	0C82126A	TR 2SC3419(O,Y)	R584L,R	0B05578A
Q530,531	0B10078A	TR 2SC2240(GR)	R585L,R	0B05691A
Q532	0B06180A	TR 2SA970(GR)	R586L,R	0B05645A
Q534-6	0B06180A	TR 2SA970(GR)	R587-91L,R	0B11032A
Q537,539	0C82130A	TR 2SA1356(O,Y)	R592-96L,R	0B05622A
Q538	0B10078A	TR 2SC2240(GR)	R597-99L,R	0B01933A
Q540	0B10181A	FET 2SK117	R600-04L,R	0B01933A
Q540L,R	0B06180A	TR 2SA970(GR)	R605L,R	0B05614A
Q541L,R	0B10078A	TR 2SC2240(GR)	R606L,R	0B05675A



Schematic Ref No.	Part No.	Description
	CA80486A	D/A Converter P.C.B. Ass'y
	0C82027A	D/A Converter P.C.B.
B501	0E00521A	M3x8 + Pan
BP501	0C82172A	Bus-line Plate
C501-6	0B41635A	CMM 0.1u 63V J
C508L,R	0B41731A	CM 3300P 100V J
C509L,R	0C82247A	CSP 300P 160V J
C510L,R	0C82248A	CSP 560P 160V J
C511L,R	0C82249A	CSP 2400P 100V G
C512L,R	0C82178A	C 47P 500V J
C513L,R	0C82178A	C 47P 500V J
C514L,R	0C82179A	C 10P 500V J
C515,516	0B05654A	CE 2200u 25V
C518,519	0B01405A	CE 1u 50V
C523L,R	0C82192A	CM 1u 160V K
C524L,R	0C82180A	C 22P 500V J
C527L,R	0B41507A	C 22P 50V J
C528L,R	0B09872A	CF 0.22u 50V
C529L,R	0B09872A	CF 0.22u 50V
C530L,R	0C82194A	CM 0.22u 100V K
C531	0C02191A	CE 2200u 16V B
C532,3	0B09880A	CF 1u 50V J
C534,5	0B09870A	CF 0.15u 50V J
D501-2L,R	0B06397A	SiD 1SS176
D503-4L,R	0B12168A	ZD 10V RD10JSB2
D505-8L,R	0B06397A	SiD 1SS176
D509-10L,R	0B12168A	ZD 10V RD10JSB2
D511,512	0B06397A	SiD 1SS176
D513	0B12150A	ZD 5.6V RD5.6JSB2
D514,515	0B12175A	ZD 12V RD122JSB3
D516,517	0B12147A	ZD 5.1V RD5.1SB2
D518-521	0B06397A	SiD 1SS176
D522	0B82108A	SiD DBA10B
D529,530	0B12162A	ZD 8.2V RD8.2JSB2
D531	0C80877A	SiD MA150
HS501-3	0C82055A	Heatsink for Q529,537,520
JU501	0C80837A	8P Connector Terminal
JU502	0C82089A	3P Connector Terminal
JU503	0C80857A	3P Connector Terminal
JU504L,R	0C80857A	3P Connector Terminal
PJ501L	0C82173A	Output Pin Jack (White)
PJ501R	0C82174A	Output Pin Jack (Red)
Q501L,R	0B06257A	FET 2SK240(GR)
Q502-3L,R	0B10078A	TR 2SC2240(GR)
Q504-5L,R	0B06180A	TR 2SA970(GR)
Q506L,R	0B10078A	TR 2SC2240(GR)
Q507L,R	0B10169A	FET 2SJ74(BL,V)
Q508L,R	0B10122A	FET 2SK170(BL,V)
Q509L,R	0B06257A	FET 2SK240(GR)
Q510-11L,R	0B10078A	TR 2SC2240(GR)
Q512-14L,R	0B06180A	TR 2SA970(GR)
Q515L,R	0B10078A	TR 2SC2240(GR)
Q516L,R	0B10169A	FET 2SJ74(BL,V)
Q517L,R	0B10122A	FET 2SK170(BL,V)
Q518,519	0B10063A	TR DTC114YS
Q521,522	0B06371A	TR 2SD1286(L,K)
Q523,527	0B10169A	FET 2SJ74(BL,V)
Q524,533	0B10122A	FET 2SK170(BL,V)
Q525,526	0B10144A	TR 2SB963(L,K)
Q528	0B10078A	TR 2SC2240(GR)
Q529	0C82126A	TR 2SC3419(O,Y)
Q530,531	0B10078A	TR 2SC2240(GR)
Q532	0B06180A	TR 2SA970(GR)
Q534-6	0B06180A	TR 2SA970(GR)
Q537,539	0C82130A	TR 2SA1356(O,Y)
Q538	0B10078A	TR 2SC2240(GR)
Q540	0B10181A	FET 2SK117
Q540L,R	0B06180A	TR 2SA970(GR)
Q541L,R	0B10078A	TR 2SC2240(GR)

Schematic Ref No.	Part No.	Description
Q542L,R	0B06180A	TR 2SA970(GR)
Q543L,R	0B10078A	TR 2SC2240(GR)
R501-504	0B05691A	RK 390 1/4W J
R505-508	0B09326A	RK 360 1/4W J
R509L,R	0B05784A	RK 560K 1/4W J
R510L,R	0B05627A	RK 1M 1/4W J
R511L,R	0B05776A	RK 330K 1/4W J
R512L,R	0B20396A	RM 1.33K 1/2W F
R513L,R	0B22706A	RM 562 1/4W F
R514L,R	0B09432A	RM 8.25K 1/4W F
R515L,R	0B09356A	RM 10K 1/4W F
R516L,R	0C82206A	RM 270K 1/4W F
R517L,R	0B22567A	RM 100 1/4W F
R518L,R	0C82207A	RM 33.2 1/4W F
R519L,R	0B09356A	RM 10K 1/4W F
R520-1L,R	0B22588A	RM 23.7K 1/2W F
R522L,R	0B22589A	RM 100K 1/2W F
R523L,R	0B22595A	RM 51.1K 1/4W F
R524L,R	0C82208A	RM 6.19K 1/2W F
R525L,R	0B09491A	RM 1K 1/4W F
R526L,R	0B09769A	RM 17.8K 1/4W F
R527L,R	0C82209A	RM 88.7 1/4W F
R528L,R	0B09491A	RM 1K 1/4W F
R529L,R	0B09356A	RM 10K 1/4W F
R530L,R	0C82210A	RM 270K 1/4W F
R531L,R	0B22567A	RM 100 1/4W F
R533L,R	0B09356A	RM 10K 1/4W F
R534L,R	0B22590A	RM 1M 1/2W G
R535L,R	0B22590A	RM 1M 1/2W G
R536-7L,R	0B20397A	RM 220 1/2W J
R538L,R	0B22590A	RM 1M 1/2W G
R540,541	0B09491A	RM 1K 1/4W F
R542	0B09829A	RM 3.32K 1/4W F
R543	0B09203A	RM 10K 1/4W F
R544	0B09305A	RM 100K 1/4W F
R545	0B22595A	RM 51.1K 1/4W F
R546	0C82211A	RM 5.6K 1/4W F
R547	0B09829A	RM 3.32K 1/4W F
R548	0B09203A	RM 10K 1/4W F
R549	0B22595A	RM 51.1K 1/4W F
R550	0B09305A	RM 100K 1/4W F
R551	0C82211A	RM 5.6K 1/4W F
R552	0B09203A	RM 10K 1/4W F
R553-4L,R	0B09829A	RM 3.32K 1/4W F
R555L,R	0B22590A	RM 1M 1/2W G
R556-7L,R	0B09829A	RM 3.32K 1/4W F
R558L,R	0B22595A	RM 51.1K 1/4W F
R559,560	0B22567A	RM 100 1/4W F
R564L,R	0B01888A	RK 10K 1/4W J
R565L,R	0B01889A	RK 100K 1/4W J
R566L,R	0B09491A	RM 1K 1/4W F
R569,570	0B22595A	RM 51.1K 1/4W F
R571	0B01679A	RK 100 1/4W J
R574L,R	0B22567A	RM 100 1/4W F
R575L,R	0B22567A	RM 100 1/4W F
R576-7L,R	0B09203A	RM 10K 1/4W F
R578L,R	0C82210A	RM 270K 1/4W F
R579-80L,R	0B22567A	RM 100 1/4W F
R581-2L,R	0B09203A	RM 10K 1/4W F
R583L,R	0B05623A	RK 1.2K 1/4W J
R584L,R	0B05578A	RK 180 1/4W J
R585L,R	0B05691A	RK 390 1/4W J
R586L,R	0B05645A	RK 270 1/4W J
R587-91L,R	0B11032A	RK 220 1/4W J
R592-96L,R	0B05622A	RK 2.2K 1/4W J
R597-99L,R	0B01933A	RK 220 1/4W J
R600-04L,R	0B01933A	RK 220 1/4W J
R605L,R	0B05614A	RK 1.8K 1/4W J
R606L,R	0B05675A	RK 3.9K 1/4W J

Schematic Ref No.	Part No.	Description
R607L,R	0B05629A	RK 2.7K 1/4W J
R608L,R	0B20002A	RK 10M 1/4W J
R609L,R	0B05784A	RK 560K 1/4W J
R610L,R	0B05575A	RK 560 1/4W J
R611	0B01888A	RK 10K 1/4W J
R612L,R	0B05614A	RK 1.8K 1/4W J
R613L,R	0B05575A	RK 560 1/4W J
R614L,R	0B05614A	RK 1.8K 1/4W J
R615,616	0B05577A	RK 330 1/4W J
R617L,R	0B22595A	RM 51.1K 1/4W F
RV501L,R	0C82139A	Semi VR 100K
RV551-2L,R	0C82140A	Semi VR 50K
RY501-2L,R	0C82135A	Relay HD1-M-DC24V
TP1	0C82263A	Test Terminal
U501-4	0C82133A	IC TLP552
U505	0C82134A	IC TLP621-2
U506-7L,R	0C82132A	IC TC74HC595P
U508L,R	0C82123A	IC PCM54 (KP)
U509L,R	0B11032A	IC LF353N
W501	0C82253A	Shielded Wire

Q507L,R, Q508L,R, Q517L,R, Q523/Q524, and Q527/Q533 are paired transistors. When one of them is damaged, replace it in the same rank (BL or V) as the paired one.
U508L,R are paired ICs. If only one of them is damaged, replace the IC pair.

8. SCHEMATIC DIAGRAM

8.1 IC Block Diagrams and Descriptions

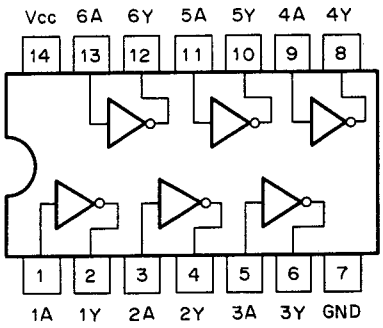


Fig. 8.1.1. Inverter TTL IC 74LS04

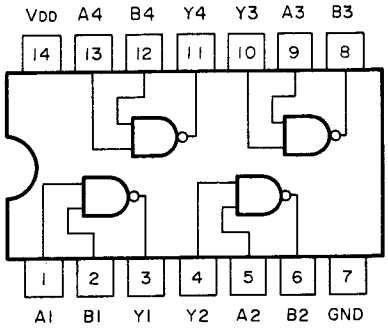


Fig. 8.1.2. NAND Gate C-MOS IC MN4011BP

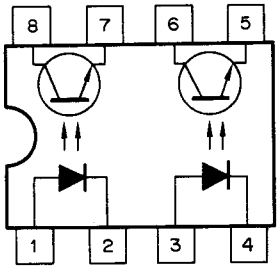


Fig. 8.1.3. Photo Coupler IC TLP621-2

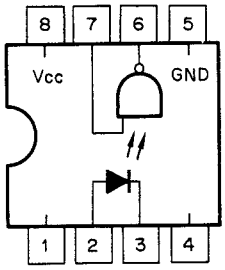


Fig. 8.1.4. Photo Coupler IC TLP552

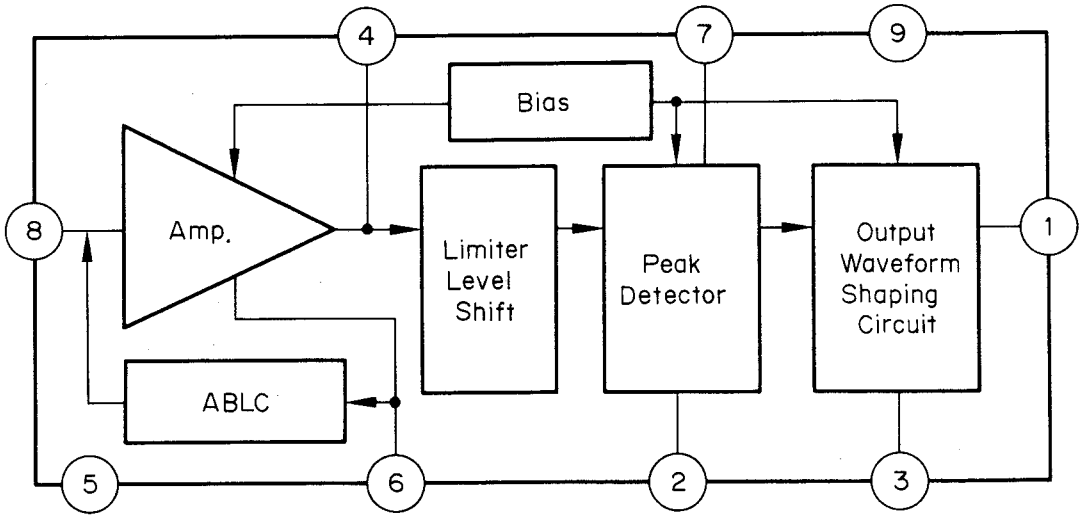


Fig. 8.1.5. Pre-Amp. IC uPC1474HA

MC-Service

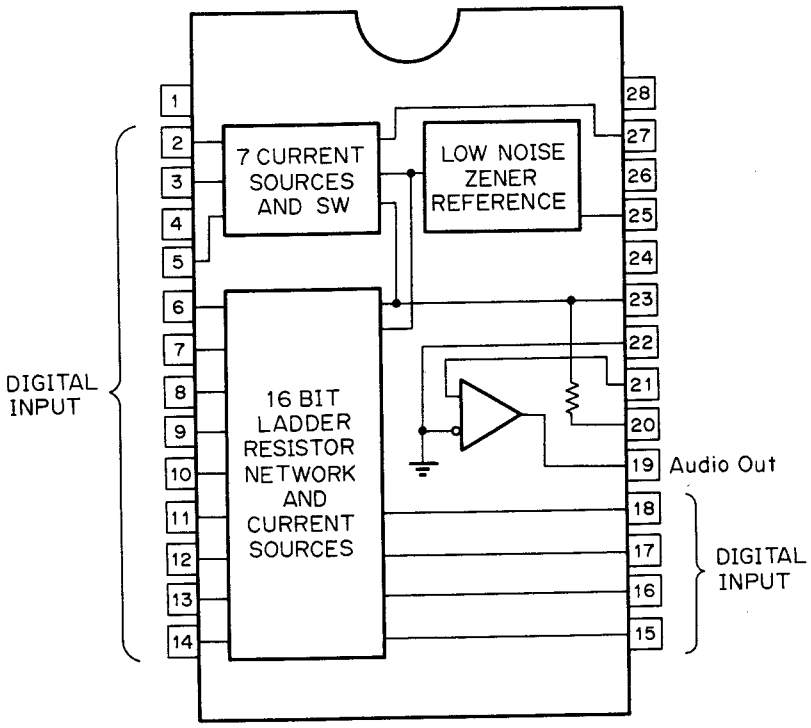


Fig. 8.1.6. D/A Converter IC PCM54KP

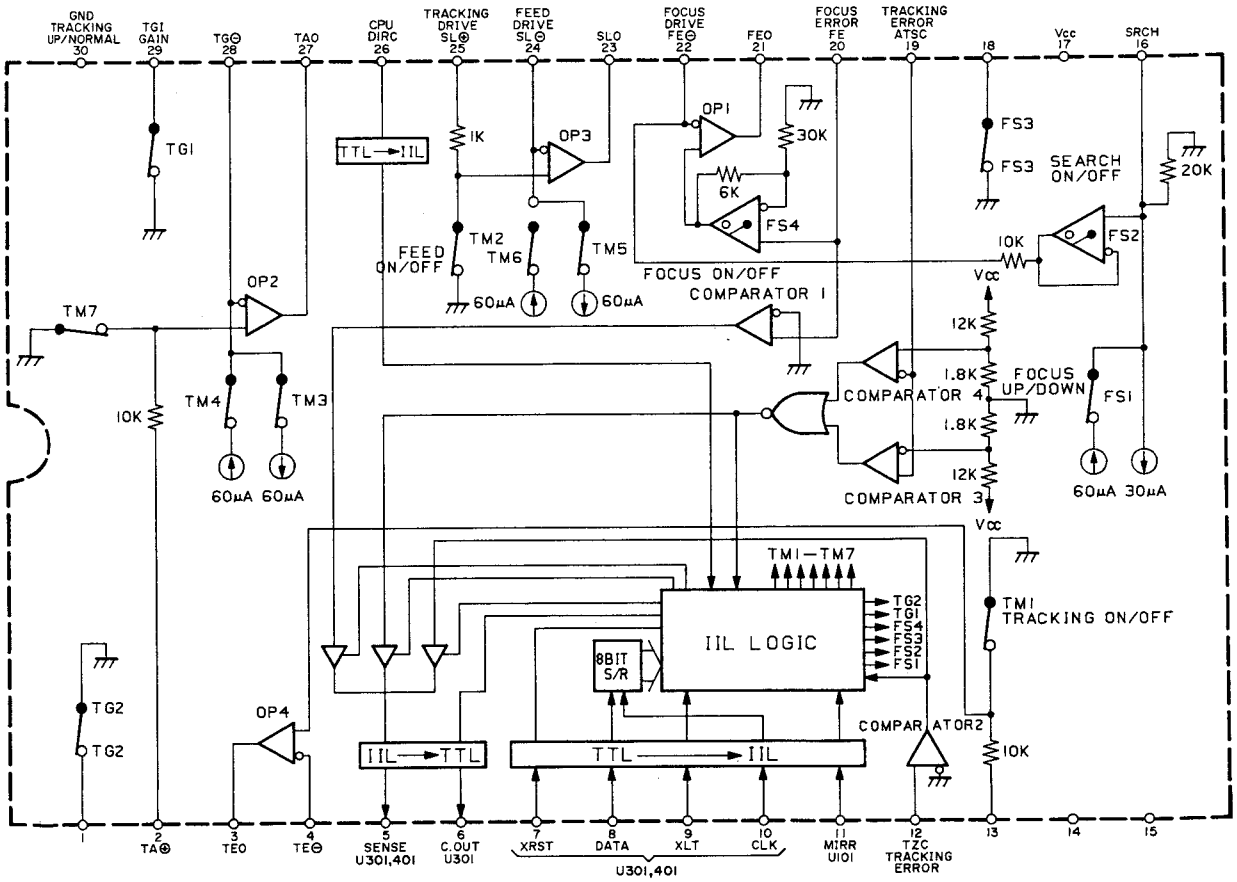


Fig. 8.1.7. Servo IC CX20108

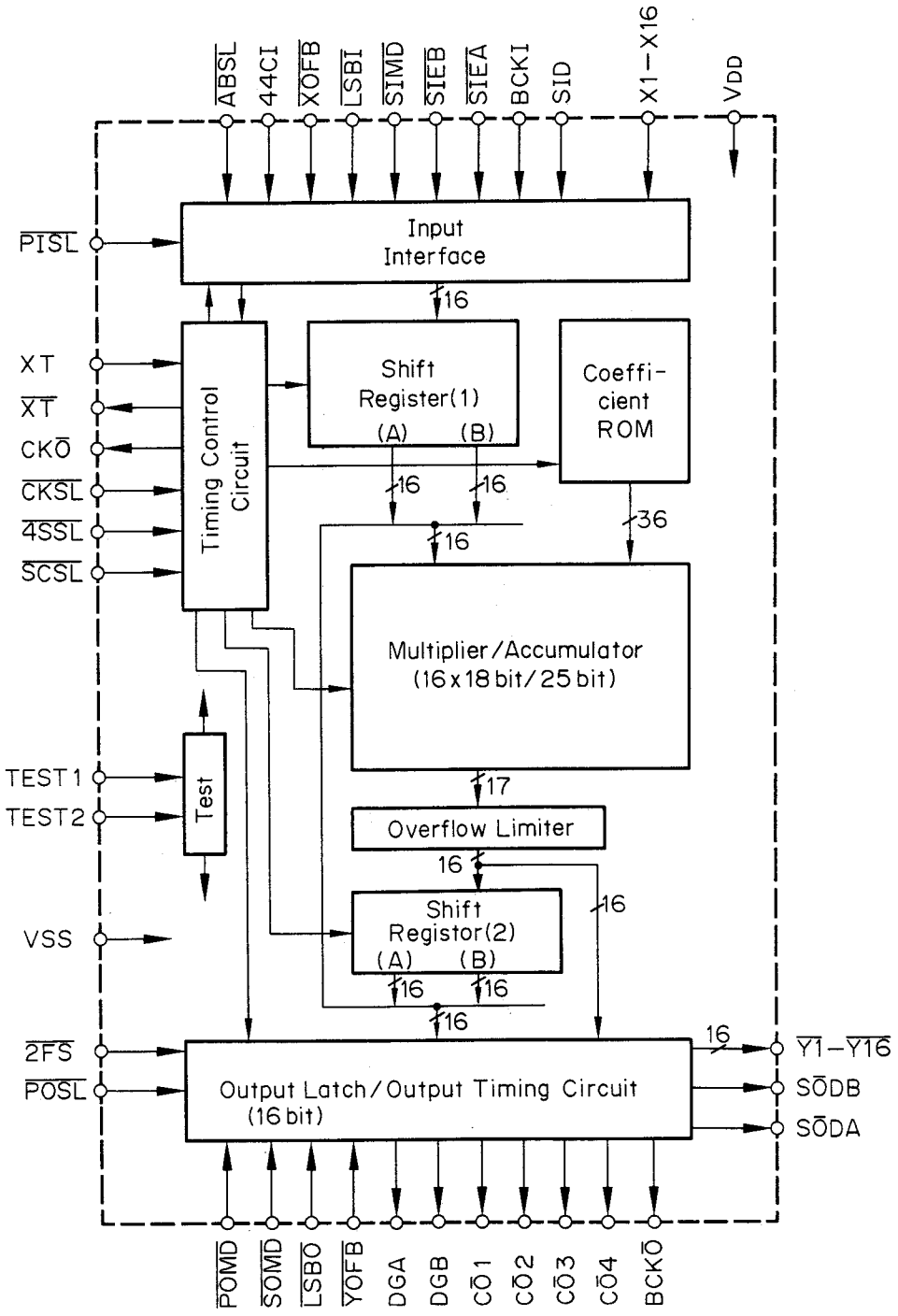


Fig. 8.1.8. Digital Filter IC SM5804B

MC-Service

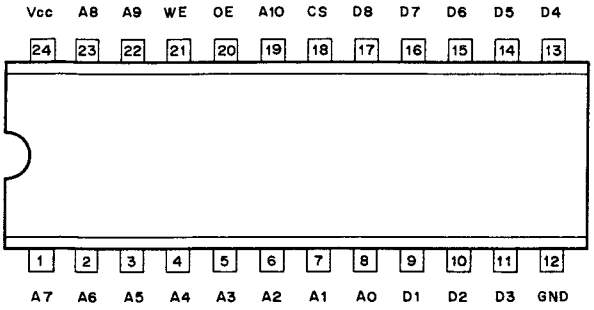


Fig. 8.1.9. 16k bit Static RAM LP6116

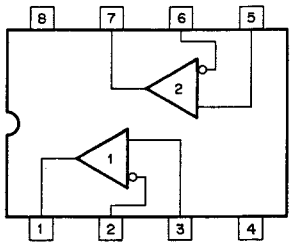


Fig. 8.1.10. Operational Amp.IC M5218P, M5221P, LF353N, NJM4556D

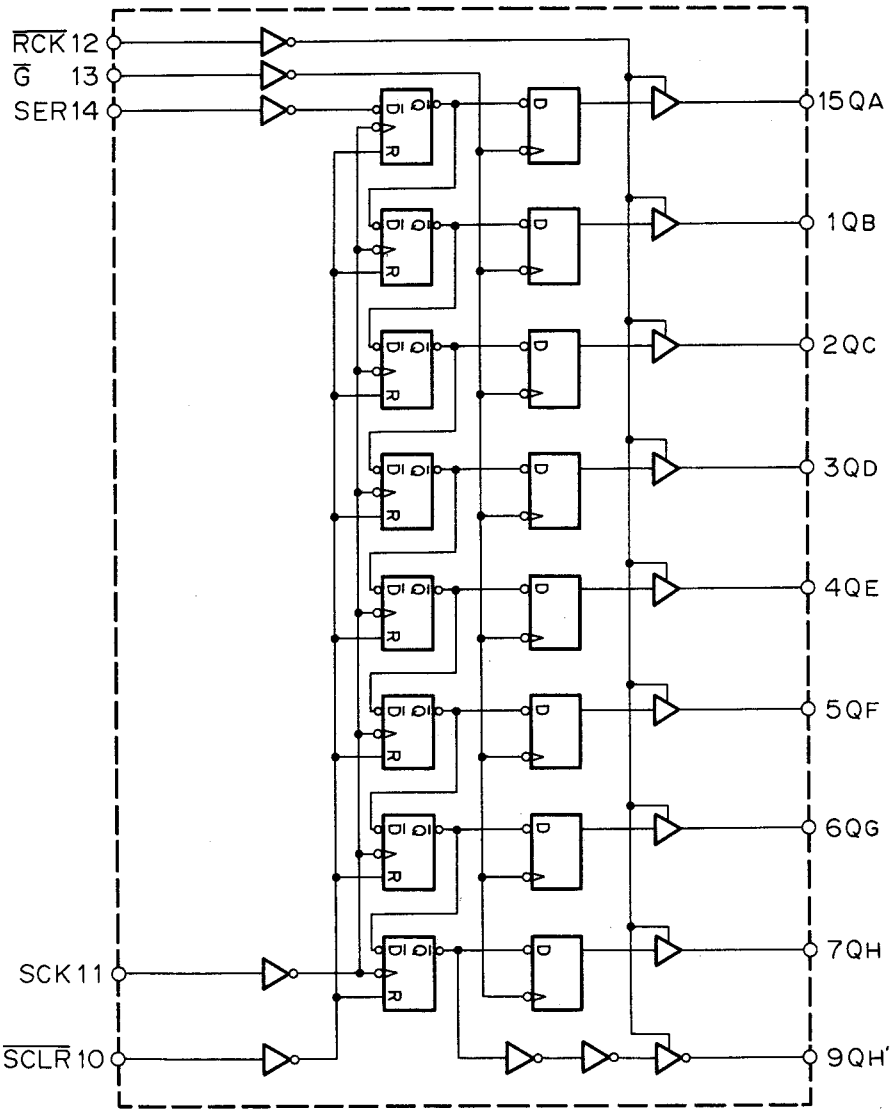


Fig. 8.1.11. Shift Register/Latch C-MOS IC TC74HC595P

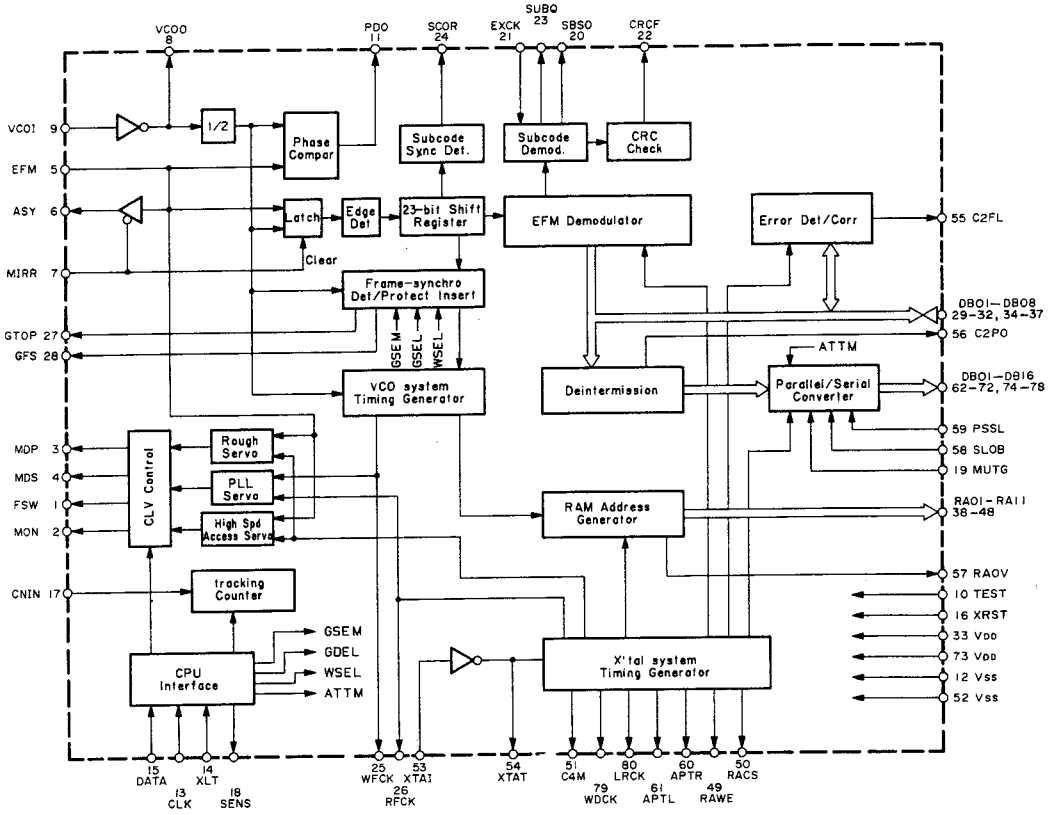


Fig. 8.1.12. Digital Signal IC CX23035

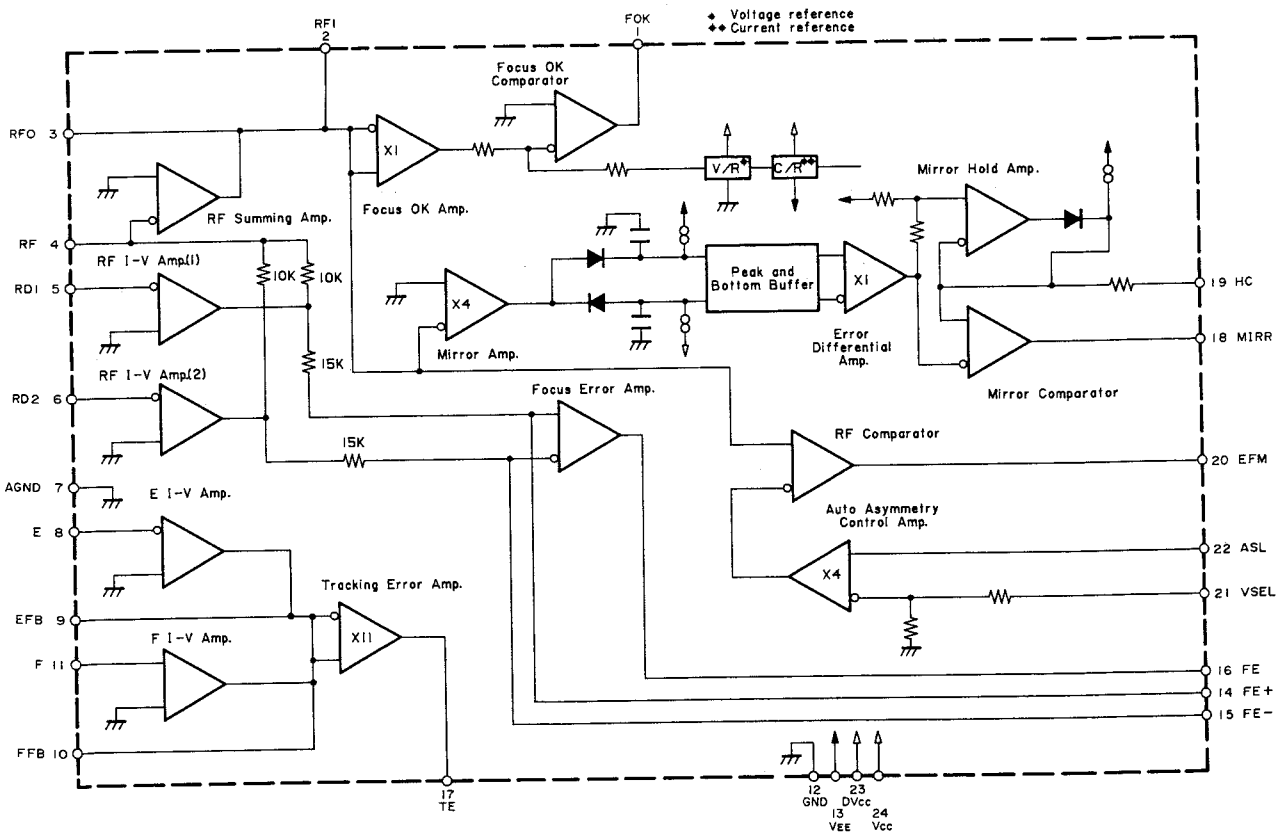


Fig. 8.1.13. RF Amp. IC CX20109

MC-Service

CPU (U401) function table

Pin No.	Signal Name	I/O	Description
1	SCRC	I	When disc is scratched this turns to high.
2	GFS	I	When disc rotation stabilizes this turns to high.
3	$\overline{\text{LASER}}$	O	Turns to low to emit laser.
4	$\overline{\text{DISCSET}}$	I	Turns to low when a disc is set.
5	EMPH	O	When disc data is emphasized, this signal turns to high automatically.
6	PLAY	O	To light Play indicator this turns to high while playing.
7	PAUSE	O	To light Pause indicator this turns to high while pause engaged.
8-17	----	-	Not used.
18	WFCK	I	7.35kHz clock
19	VDISP	-	Connected to GND.
20	$\overline{\text{INSIDE}}$	I	When the pickup goes to the inner limit SW, this signal turns to low.
21	$\overline{\text{ACK}}$	O	When U402 sends data to U401 completely, this turns to low.
22	SENSE	I	SENSE signal from U101, 301.
23	SCOR	I	75Hz clock
24	DATA4	I	Communication data from U402.
25	$\overline{\text{OPENEND}}$	I	When the disc tray fully opens, this signal turns to low.
26	DATA5	I	Communication data from U402.
27	FOK	I	When focus is in, this signal turns to high.
28	$\overline{\text{OPEN}}$	O	Turns to low when opening the tray.
29	$\overline{\text{CLOSE}}$	O	Turns to low when closing the tray.
30-31	----	-	Not used.
32	Vcc	-	+5V
33	WFCK	I	7.35kHz clock
34	SUBQ	I	Subcode data input
35	----	-	Not used.
36	$\overline{\text{CLSEND}}$	I	When the tray closes completely, this turns to low.
37	DATA	O	Servo control signal for U101, U301.
38	----	-	Not used.
39	XLT	O	Servo control signal for U101, U301.
40	CLK	O	Servo control clock for U101, U301.
41	SDATA	O	Communication serial data to U402.
42	SRST	O	Communication data start signal to U402.
43	SCK	O	Communication data clock to U402.
44	----	-	Not used
45	DATA0	I	Communication data from U402.
46	DATA1	I	Communication data from U402.
47	DATA2	I	Communication data from U402.
48	DATA3	I	Communication data from U402.
49	RESET	I	Reset input signal. High for reset.
50	TEST	I	Connected to +5V.
51	OSC1	I	CPU clock, 4.235MHz.
52	OSC2	I	Not used.
53	GND	-	Ground terminal
54	CRCF	I	Turns to high when the CRC check is good.
55	$\overline{\text{MUTE}}$	I	Control signal to U301. Low to mute output signal.
56	DIRC	O	Track search control signal.
57	$\overline{\text{H MUTE}}$	O	Low while half-mute
58	----	-	Not used.
59	SENSE	I	SENSE siganl from U101, U301.
60	----	-	Not used.
61	----	-	Not used.
62	$\overline{\text{PMUTE}}$	O	Turns to low to mute output signal when power turns on.
63	$\overline{\text{TEST}}$	I	Low for test mode.
64	$\overline{\text{STB}}$	I	Strobe signal. When received data is good, turns to low.

CPU (U402) function table

Pin No.	Signal Name	I/O	Description
1	DIG4	O	Display digit data.
2	DIG5	O	Display digit data.
3	DIG6	O	Display digit data.
4	DIG7	O	Display digit data.
5	----	-	Not used.
6	SEGd	O	Display segment data.
7	SEGc	O	Display segment data.
8	SEGb	O	Display segment data.
9	SEGa	O	Display segment data.
10	SEGh	O	Display segment data.
11	SEGg	O	Display segment data.
12	SEGf	O	Display segment data.
13	SEGe	O	Display segment data.
14-17	UCODE	I	Selection of user code of remote signal.
18	REMO1	I	Remote controll data.
19	VDISP	-	-22V
20	SCAN6	O	Keyboard scan signal.
21	SCAN5	O	Keyboard scan signal.
22	REMO2	I	Remote control data.
23	$\overline{\text{SRST}}$	I	Communication data start detection. Turns to low when data comes from U401.
24-28	UCODE	I	Selection of user code of remote signal.
29	MRESET	O	Reset signal for U401.
30-31	----	-	Not used.
32	Vcc	-	+5V.
33	SCK	I	Communication data clock from U401.
34	SDATA	I	Communication data from U401.
35	----	-	Not used.
36	$\overline{\text{ACK}}$	I	When U401 sends data to U402 completely, this turns to low.
37	DATA0	O	Communication data to U401.
38	DATA1	O	Communication data to U401.
39	DATA2	O	Communication data to U401.
40	DATA3	O	Communication data to U401.
41	SCAN4	O	Keyboard scan signal.
42	SCAN3	O	Keyboard scan signal.
43	SCAN2	O	Keyboard scan signal.
44	SCAN1	O	Keyboard scan signal.
45	RET1	I	Keyboard return signal.
46	RET2	I	Keyboard return signal.
47	RET3	I	Keyboard return signal.
48	RET4	I	Keyboard return signal.
49	RESET	I	Reset input signal. High for reset.
50	TEST	I	Connected to +5V.
51	OSC1	-	Clock terminal, 4MHz.
52	OSC2	-	Not used.
53	GND	-	Ground terminal.
54	DATA4	O	Communication data to U401.
55	$\overline{\text{STB}}$	O	Turn to low when DATA0-DATA4 is valid.
56	DATA5	O	Communication data to U401.
57	----	-	Not used.
58	REMLED	O	High to light Remote Control Sensor LED.
59-60	----	-	Not used.
61	----	-	Connected to GND.
62	DIG1	O	Display digit data.
63	DIG2	O	Display digit data.
64	DIG3	O	Display digit data.

8.2. Circuit Description

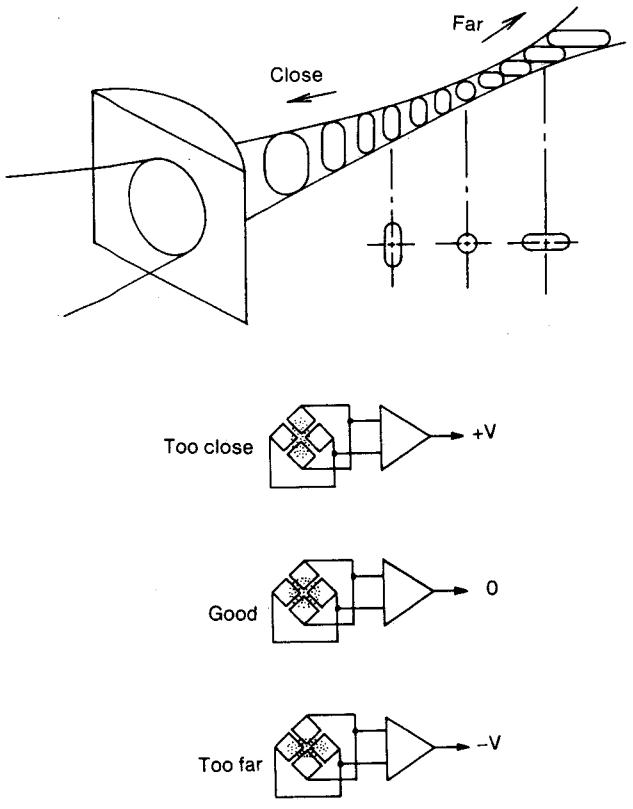
A. Laser Pickup

The laser pickup used for the OMS-7II comprises six photo diodes A to F; diodes A to D, which are located vertically and horizontally, for signal detection and diodes E and F for tracking servo.
Since the laser light scintillated onto the surface of compact disc is turbulently reflected by pit area and entirely reflected by no pit area, the digital signals in disc can be read out by detecting the reflected laser light. The signals detected by photo diodes A to D is sent to U101(CX20109); signals from A+C are to #6 (PD2) pin and B+D to #5 (PD1) of U101 to be summed and generate an EFM signal at #3(RFO) pin. The test point marked EYE PATTERN TP is the check point for the EFM signal. The EFM signal input to #2(RFI) pin is shaped out by the comparator in U101 to be binary signals. The reference voltage of the comparator, at #22(ASY) pin of U101, drifts up and down in accordance with the shape of CD pits. The binary EFM signal is sent from #20(EFM) pin of U101 to #5(EFM) pin of U301 (CX23035).

B. Servo System

The model OMS-7II utilizes four servo circuits -- the focus servo, tracking servo, feed servo, and CLV servo -- which are controlled by U102 (CX20108) AND U301 (CX23035).

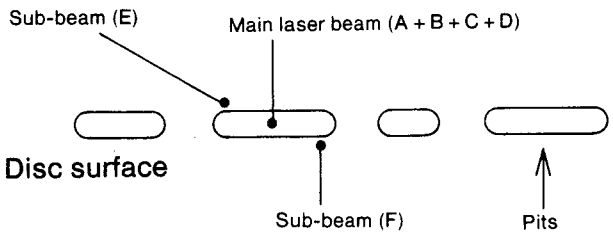
B-1 Focus Servo
The astigmatic method is employed for the focus control which utilizes the fact that routing the reflected laser light through a semi-cylidrical lens changes the shape of the beam in accordance with the distance.



The theory of the astigmatic method

Providing a focalization is made at the point which the beam becomes a true circle, an out-focus condition due to too far or too close situation can be detected since it varies the shape of the beam.
The focus servo circuit of the model OMS-7II generates the difference (A+C)-(B+D) from the laser pickup output signals (A+C) and (B+D). The focalization is perfect when this difference, the focus error signal, equals zero. U102 delivers the focus drive signal from the focus error signal which is in turn applied to the focusing coil of the laser pickup to focalize. U102 sends this focus drive signal to the laser pickup from #21 pin(FEO). Q103 and Q104 current-amplify this signal and apply this signal to the laser pickup.

B-2 Tracking Servo
Tracking servo is required to chase disc pit rows since CD systems do not have a guide to lead laser beam to the pit. The model OMS-7II employs 3-beam tracking servo system.



The 3-beam tracking servo

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Three laser beams are irradiated towards the pits in slightly offset intervals to each other as shown. Servo is achieved by the following fact that: where the main beam (indicated by point [A+B+C+D] above, is precisely on the pit, (E-F) is zero; otherwise not).
The E and F signals, input from #8(E) and #11(F) pins of U101, generate (E-F) signal inside and delivered at #17(TE) pin. RV102(Radial Offset) is for the offset adjustment; RV103(Radial Gain) is for the servo gain adjustment. The TE(tracking error) signal from U101 enters into #13 pin(TE) of U102 again and U102 makes tracking servo control signal according to the tracking error signal. The tracking servo control signal goes out of U102 from #27 pin (TAO) and Q107 and Q108 current-amplify to drive the tracking coil of the laser pickup.
In searching for a track the laser pickup should be moved quickly. U401(CPU) transmits data to pins #8(DATA) to #10(CLK) of U102 which in turn delivers the pulse from pin #27 in accordance with the corresponding pulse width.

B-3 Feed Servo

The feed servo serves for dual purpose -- to gradually move back and forth the entire of the laser pickup in accordance with the procession of disc playing; and to move the pickup quickly for searching tracks.
The lens of the laser pickup is able to travel at a small distance to follow the pits when playing with the entire pickup stopped. As the lens approaches the limit of the travelable range, DC components come to be contained in the tracking servo signals. The feed servo acts to detect the DC components and maintains the lens to be in the middle of the moveable range, namely to maintain the DC component to be zero.
The fraction of tracking servo signal from pin #27(TAO) of U102 through Q107 and Q108, only the DC component is extracted by R149, R150, C129, and C130 and applied to pin #25(SL+) of U102. This DC component is amplified in U102 and current-amplified by Q105 and Q106 and finally drives the feed motor. In regular operation, 0 to 0.4V DC is applied to rotate the feed motor every several seconds.
The feed motor is energized by the plus or minus DC at pin #23(SLO) corresponding to data from the CPU during searching the tracks.

B-4 CLV (Constant Linear Velocity) Servo Circuit

Unlike analog records, the rotation of compact disc is 500rpm in inner area and 200rpm in outer area. The CLV servo acts to maintain the proper rotation of the disc motor. The reference to determine if the rotation is too fast or too slow depends upon the coincidence of the phase of the RF signal to U301 and the reference clock signal. The correct motor rotation causes a 50% duty signal delivered at pin #3(MDP) of U301; while a faster rotation causes a longer duty signal (a signal with the long "high" period of time); a slower rotation causes a shorter duty signal to be delivered. This signal is amplified by U304(1/2, 2/2), Q301, and Q302 and finally drives the disc motor.

C. APC(Auto Power Controller) Circuit

The APC circuit is provided to maintain the constant laser output level in spite of the variation in temperature etc.
The monitor diode located in the close proximity of the lens feeds back the variation to keep the current flowing through the diode constant. The feed back voltage from the monitor diode is compared to reference voltage by U103. Q601 amplifies its output and applies to laser emission diode to control laser output. When no disc is inside or the unit is in stop mode, "high" status of pin #3(LASER) of U401 turns Q602 off and in turn Q601 on so that the output of U103 connected to -5V. Therefore the laser diode turns off.

D. Signal System

The signals detected by the laser pickup are applied to U101 -- (A+C) to #5 pin(PD1); (B+D) to #6 pin(PD2) -- and generated as EFM signal of (A+B+C+D) and output at #3 pin (RFO). The EFM signal is input to #2 pin and to the comparator inside U101 which rejects DC components from the EFM signal to an asymmetrical configuration to convert it to the binary signal.
The EFM signal then input to pin #5(EFM) of U301 which serves to demodulae EFM data, reproduction of bit clock, error detection/correction, data interpolation, and sub-code demodulation, etc. Since to read out the data input to pin #5(EFM) of U301, the clock should be reproduced by the discrete VCO(Voltage Controlled Oscillator) is used. The VCO clock frequency and EFM waveform are compared with each other in the phase comparator of U301 and the difference, if found, is delivered to pin #11(PDO). The difference is filtered to smooth DC inside U301 finally controlling the VCO frequency determined by L303, D301 and D302. This PLL (Phase Locked Loop) circuit reproduces the bit clock, 4.3218MHz.
The reproduction of the bit clock causes the demodulation of the EFM signal into digital data inside U301, and sending the demodulated data to store it in the RAM(U302). Should an error be found in the demodulated data, the stored data is recalled from the RAM for correction and interpolation and the corrected data is sent pins #76(DA14) to #80(LRCK) of U301.
Reproduced sub-code is sent to CPU(U401) and used to display the track number, playing time, remaining time, index, etc.
U303 is a quadruple oversampling digital filter. It removes unnecessary components above 20kHz from U301 output. The frequency of these unnecessary components are multiply of sampling frequency (44.1kHz) for digitizing music signal. These unnecessary components must be removed because it may damage an amplifier or speakers. However, removing these components by an analog filter is very difficult since unnecessary components and signals are close in frequency. For this reason the OMS-7II employs the digital filter to multiply the data which was sampled at 44.1 kHz sampling frequency to the quadruple frequency of 176.4 kHz. Then the unnecessary components over 20 kHz can be removed by a filter easily.
U501 - 505 are opt-isolators (photo couplers) which isolates the digital circuitry and the analog circuitry. The music information which comes to U501-504 as digital data carries high frequency noise which may stain analog output signal. The opt-isolators convert the digital data into light, then re-convert it into digital signals again, not electricity. Thus these isolators isolate the digital circuitry and the analog circuitry so that high-frequency digital noise is prevented from going to analog circuitry.
Since re-converted digital signal is serial data, U506 and U507 convert the serial data to parallel data. U508L/R (PCM54KP) are resistor-radder type DAC (Digital to Analog Converter) which converts and digital data input from pins #2 to #16 into analog signals. U508 has a reference current source. Its current is divided by resistor array, and switch the divided current according to the bit significance of input signal.
Finally analog music signal is reproduced, but it still has unnecessary compnents above 20kHz, Two diffrential amplifiers (Q501, 502, 503, 505, 511, 509, 510, 513, and 514) filter the analog signal to remove unnecessary components.
RY501 is controlled by the CPU(U401) and switch to vary the response of the CR filter(C510, C511, R520, and R524) when the high frequency range of disc is emphasized. RY502 is muting relay which is controlled by the CPU(U401). It cuts off audio output noise when the power is turned on or off.

E. Control System

U401 mainly serves as the system controller and U402 mainly serves as the keyboard and display controller. U401 exchanges data with the servo IC(U102) and digital control IC(U301) to control the other stages and sends necessary information to U402. U402 receives data from the keyboard, remote control receiver and U401. For basing information and block diagram, see separate IC block diagrams.
The laser pickup moves widely when performing track search or when the F.Fwd button or Rev button is pressed. U401 sends data and clock (CLK, XLT, DATA) to U102 to move the laser pickup necessarily. U102 demodulates the data and controls the tracking servo or feed servo.

F. Power Supply Circuit

The model OMS-7II has four sorts of power supplies, one is for digital circuit(±5V), another is mainly for servo driving transistors (±11V), another is for the output amplifier and the headphone amplifier(± 15V), the other is for FL display tube. ±5V are obtained at the output of Q802 and Q804, the buffers, with reference to the zener diodes D803 and D804 voltage. The FETs Q801 and Q803 feed a constant current through D803 and D804 to avoid the draft in ±11V line affect ±5V. The D/A converter board mounts the power supplies of ±15V for feeding the audio stages (the output amp, headphone amp, and the relay) and +6V for the digital circuit.
An error-amplification type is used for the ±15V supply. Q527 and Q528 stabilize the reference voltage obtained by the zener diodes D516. Using this reference voltage Q532, D518, R545, Q532, D518 and D519 error-amplify to make ±15V DC. Q532, D518 and D519 are constant current circuit to raise error-amplifier gain.
To avoid interference at each other, ±9V for output amplifier, ±12V for output amplifier, and ±12V for muting relay are obtained from ±15V reference voltage.

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8.3. Waveform at Major Points

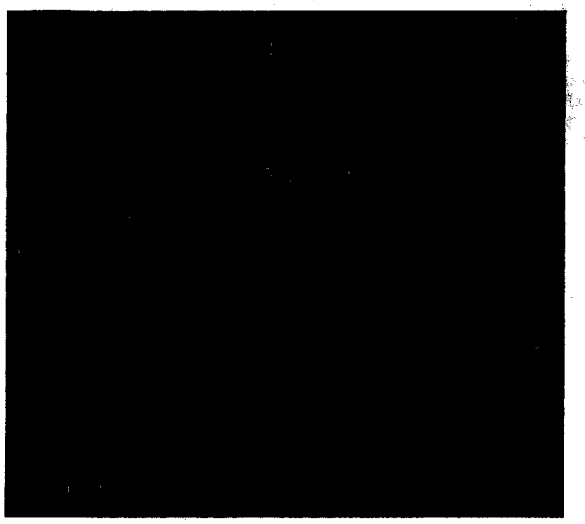


Fig. 8.2.1. Focus Servo Signal at TP(FOCUS) in PLAY mode

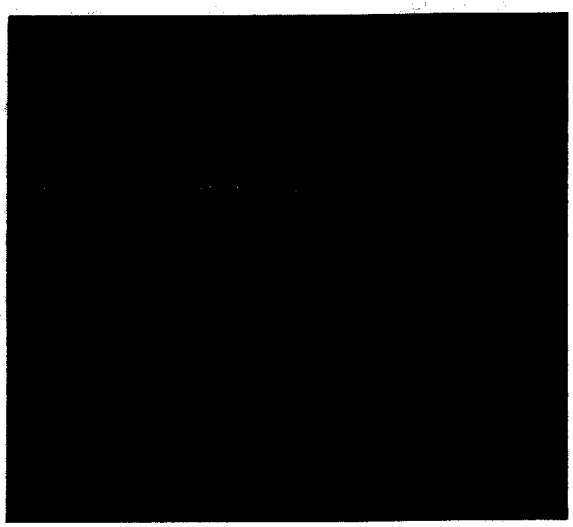


Fig. 8.2.2. Focus Servo Signal at TP(FOCUS) in STOP mode

Fig. 8.2.3. E-F Balance Signal at TP(EF)

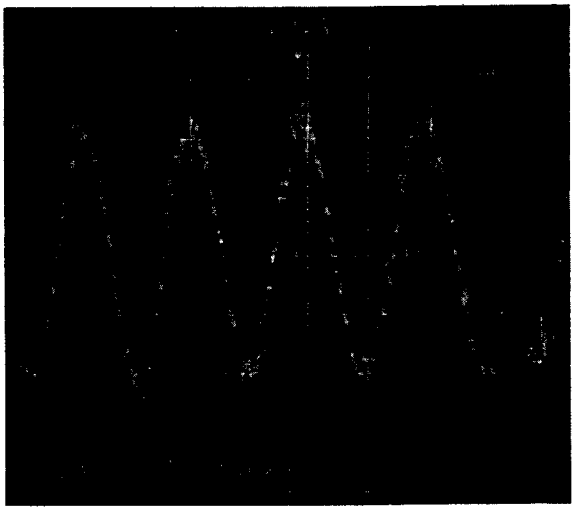
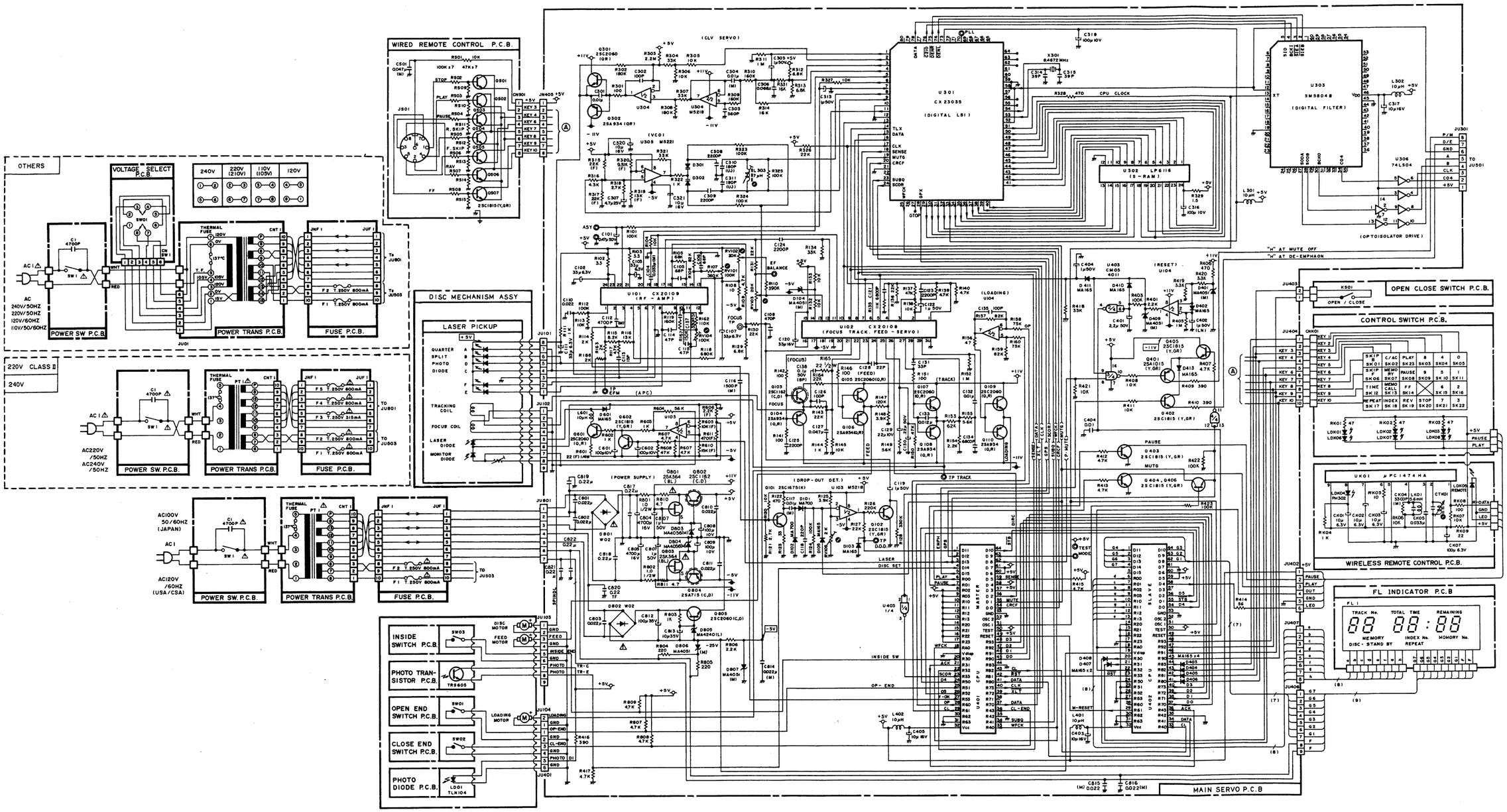


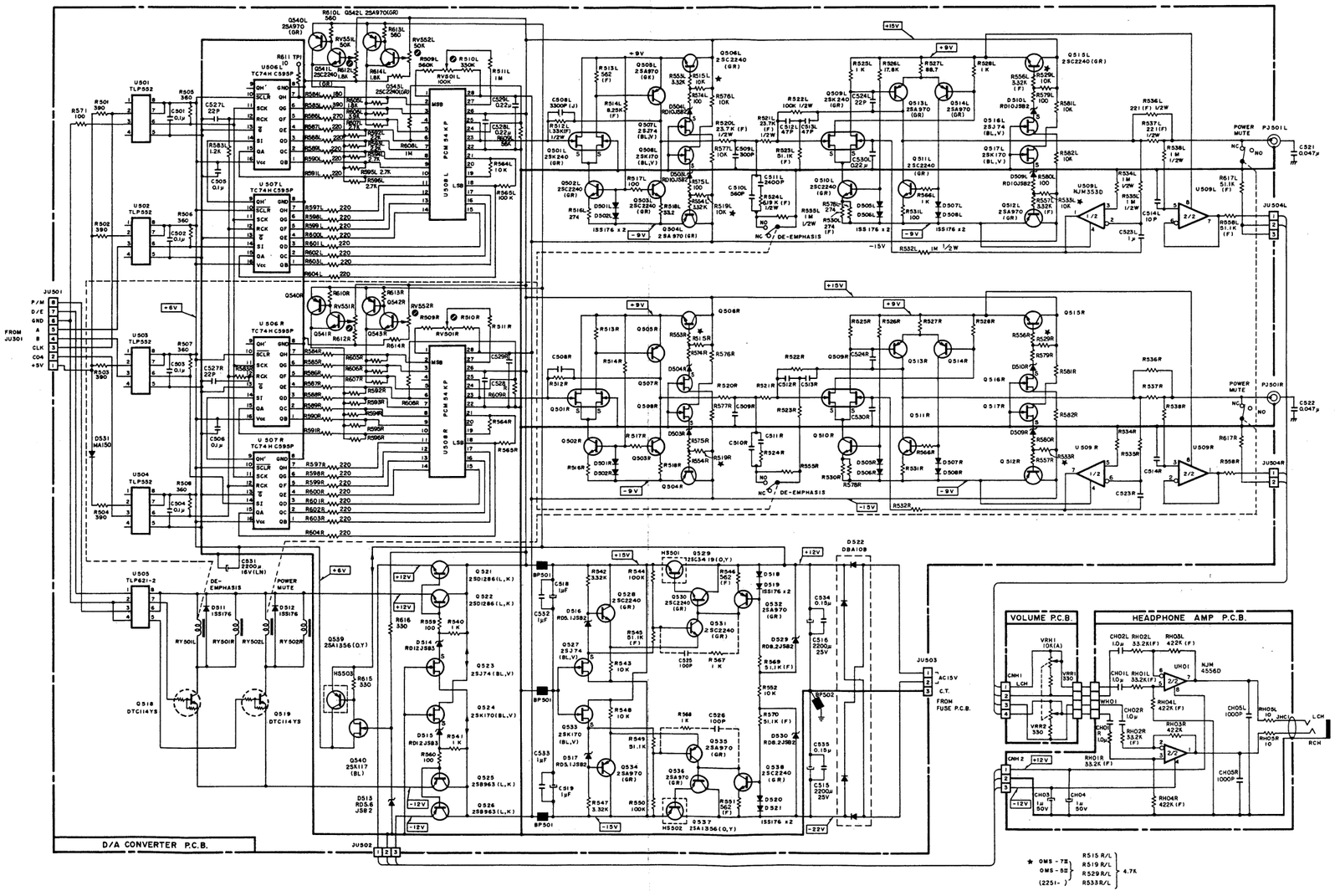
Fig. 8.2.4. E-F Balance Signal at TP(EF) (Oscilloscope in storage mode)

Warning:
Parts marked with the symbol ⚠ have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer. It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedure.

Caution:
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240k ohms, the unit is defective.
WARNING -- DO NOT return the unit to the customer until the problem isolated and corrected.

8.3. Schematic Diagram



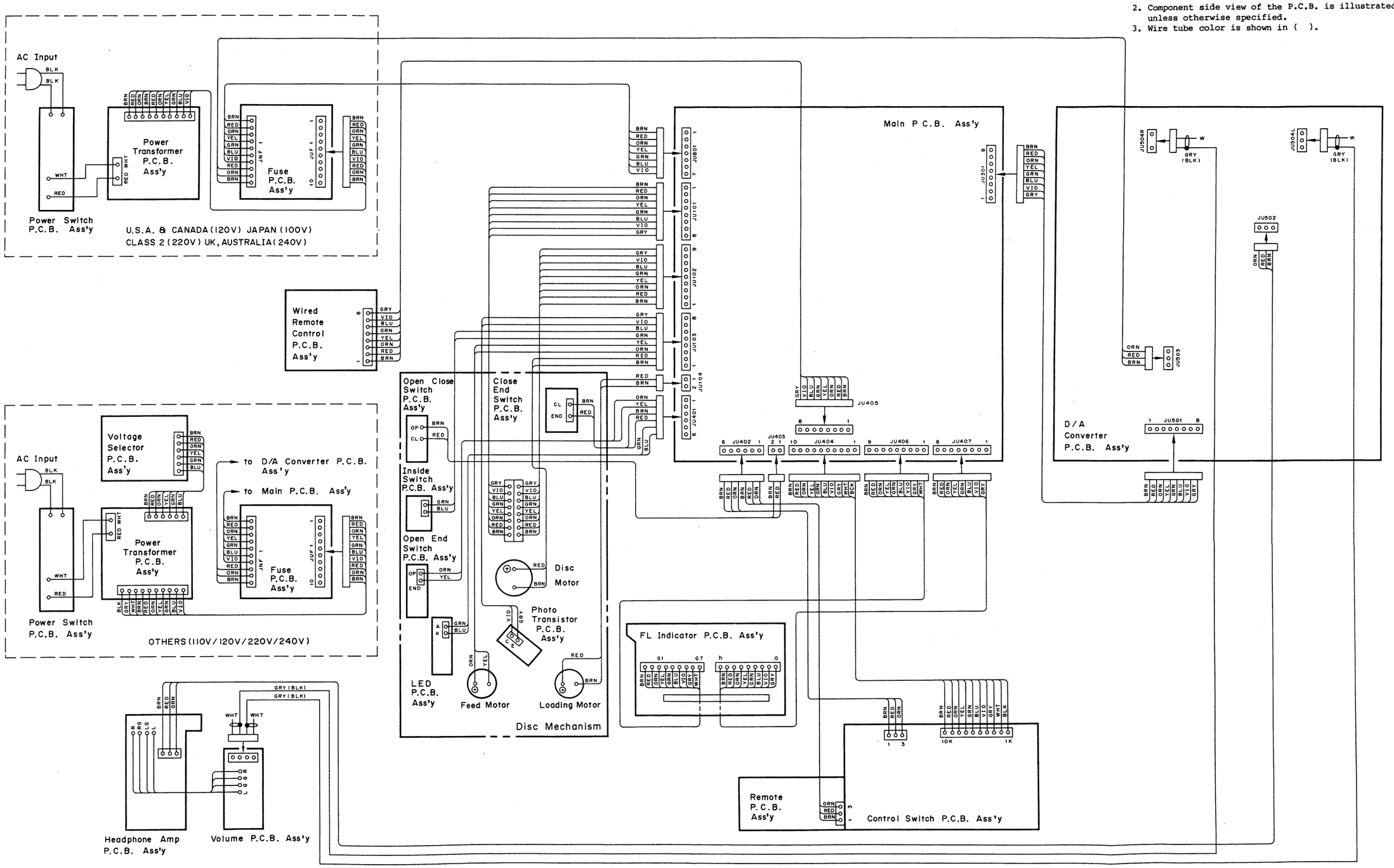

D/A CONVERTER P.C.B.
VOLUME P.C.B.
HEADPHONE AMP P.C.B.
DE-EMPHASIS
POWER MUTE
FROM JU501
FROM FUSE P.C.B.
AC15V
C.T.
DE-EMPHASIS
★ OMS-7R
OMS-5R
(2251-)
R515 R/L
R519 R/L
R529 R/L
R533 R/L
4.7K

9. WIRING DIAGRAM

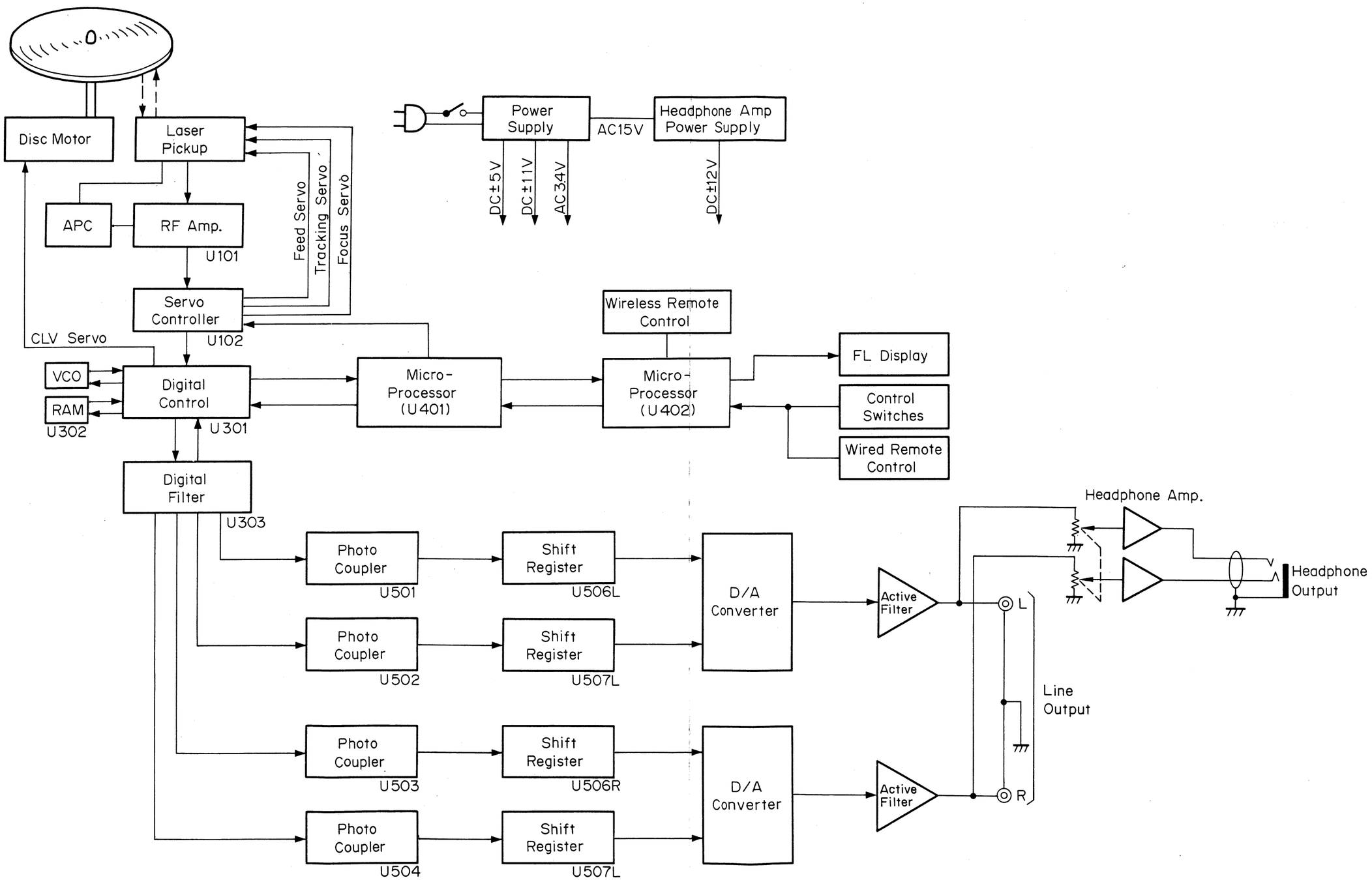
Notes: 1. Table of wire colors

BRN -- Brown	BLU -- Blue
RED -- Red	VIO -- Violet
ORN -- Orange	GRY -- Gray
YEL -- Yellow	WHT -- White
GRN -- Green	BLK -- Black

2. Component side view of the P.C.B. is illustrated unless otherwise specified.
3. Wire tube color is shown in ( ).



10. BLOCK DIAGRAM



11. SPECIFICATIONS

[Main Unit]

System	Compact Disc Digital Audio
Signal Readout	Optical (semiconductor laser)
Error Correction	CIRC principle
Number of Channels	2 channels, stereo
Sampling Frequency	44.1 kHz
Quantization	16 bit linear
Disc Rotational Velocity	Approx. 200 to 500 rpm (constant linear velocity)
Wow-and-Flutter	Below mesurement limit
Frequency Response	5 - 20,000Hz ±0.5 dB
Signal-to-Noise Ratio	Better than 102 dB
Dynamic Range	96 dB
Total Harmonic Distortion	0.003%(1 kHz)
Channel Separation	Better than 100 dB
Output (Line)	2 V (1 kHz, 0 dB, level control at maximum) into 100 ohms
(Headphones)	20 mW (1 kHz, 0 dB, level control at maximum) into 8 ohms (OMS-7II)
Power Requirements	120, 220, 240, or 110-120/220-240 V AC, 50/60 Hz (According to country of sale)
Power Consumption	25W max. (Models with voltage selector: 33W max.)
Dimensions	435 (W) x 100 (H) x 308 (D) mm 17-1/8 (W) x 3-15/16 (H) x 12-1/8 (D) inches.
Approximate Weight	7.2 Kg, 15 lbs. 13 oz.

[Remote Control Unit RM-7CD]

Principle	Infrared pulse system
Power Supply	3 V DC (1.5V x 2)
Dimensions	63 (W) x 18 (H) x 135 (D) mm 2-1/2 (W) x 3-15/16 (H) x 5-6/16 (D) inches.
Approximate Weight	100g, 3-1/2 oz. (including batteries)
Supplied Accesories	Shielded cable with RCA-type plugs x 1 IEC R6 batteries (size AA) x 2

* Specifications and design are subject to change for further improvement without notice.

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